



COURSES OF STUDY

2024-2025

Undergraduate & Postgraduate
Programmes

Engineering | Media & Entertainment
Management | Liberal Studies
Law | Sciences | Business



Gurugram, NCR

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PREFACE



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With the grant of University Status, The NorthCap University has the academic freedom to design its own syllabus. This allows us not only to eliminate the shortcomings and limitations of existing syllabus, but also to design a curriculum which is in line with the current scientific, technological and economic developments and needs of the prospective employees. The objective is to provide quality education to our students and lay a strong foundation for them to become successful Engineers, Managers and Researchers as well as law abiding responsible professionals with concern for environment, energy conservation and ethics. The curriculum is customized to our specific requirements and is comparable to the best available anywhere and it follows the well established successful teaching practices.

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Course Credit Regulations & Grading System

For B.TECH, BCA, B.Sc., BBA, BA (Hons.), BCom (Hons.), BBA-LLB (Hons.), LLB, M.TECH, MCA, MBA, MA, LLM Programmes

The evaluation scheme at the University shall be based on the internationally prevalent credit systems and continuous evaluation methods.

1. INTRODUCTION

1.1 Background

Instructional work at The NorthCap University, Gurugram is carried out using credit system of study in semester-based system. The salient features of the credit system are:

- i. Flexibility for students to progress at suitable pace depending on individual interest and ability.
- ii. Continuous evaluation of students' progress.
- iii. Award of grades in a course depending on overall performance of a student.
- iv. Performance measurement by number of Earned Credits (EC), Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). The use of grades helps in achieving a reasonable spread of total marks for a grade and in reducing variations due to evaluation by different teachers.
- v. Award of degree to a student on the basis of total ECs and value of CGPA.

There would be two regular semesters for instructional and evaluation work and also an additional to summer semester in each academic year. The odd numbered semesters (I, III, V, VII & IX) would start in July on a specified date and end in November on a date as per the yearly academic calendar. The even numbered semesters (II, IV, VI, VIII & X) would start in January on a specified date and end in May on a date as per the yearly academic calendar. The summer semester would cover practical training in industry / holding of regular classes in some courses where possible as per rules for failed students and / or holding of major test / end term practical exam. In such courses, all regulations for various requirements remain the same as for those in a regular semester.

The present document describes course credit regulations and grading system for UG (Under-Graduate) and PG (Post- Graduate) degrees. The regulations for Ph.D degree are covered separately.

The credit system including the grading award system is now mandated by regulatory bodies viz. UGC/AICTE/BCI etc. and followed world over. The focus is flexibility for students to choose and earn credits. Grading provides an idea about the performance of the student. Continuous evaluation is the essence of the system.

1.2 Programmes Offered

The NorthCap University, Gurugram offers a wide range of academic programmes for students with various Technical, Managerial and Law backgrounds. Admission to these programmes are based on JEE-MAIN, GATE, CAT & MAT, CLAT etc. which are reputed national level entrance tests and marks in the qualifying exam followed by personal interviews in some cases. Detailed information in this regard is provided separately.

The various programmes offered by The NorthCap University, Gurugram are classified as undergraduate, postgraduate and research programmes. All the undergraduate programmes admit 10+2 passed students while the students are admitted to the postgraduate programmes after they have obtained at least a Bachelor degree in relevant area. Research programmes for Ph.D. degree are to be separately covered. The information in the tabular form regarding various programmes offered with their specialization are listed below:

i. Undergraduate Programmes

SCHOOL	DEPARTMENT	PROGRAMME	
School of Engg. & Technology (SOET)	Department of Computer Sc. & Engg.	B. Tech. in Computer Science & Engineering with specialization in <ul style="list-style-type: none"> • Full Stack Development • Cyber Security & Forensics • Blockchain • Cloud Computing • Artificial Intelligence & Machine Learning • Data Science • Gaming AR & VR • IoT & 5G • Semiconductor Technology 	
		BCA With specialization in <ul style="list-style-type: none"> • Web Application Development • Mobile Application Development • Animation and Gaming 	
	Centre for Media & Entertainment	B.Sc. in Sound Engineering	
		B.Sc. in Visual Communication	
		B.Sc. in Visual Effects & Animation	
		BCA in Game Development	
		BCA in Media & Information Technology	
	School of Management & Liberal Studies (SOM&LS)	Department of Management & Commerce	BBA
			BBA in Business Analytics
			BBA in Digital Marketing
BBA in Entrepreneurship & Family Business			
B.Com (Hons.)			
B.Com (Hons.) Specialization in Financial Markets			
B.A. (Hons.) Economics			
Department of Psychology		B.A. (Hons.) Psychology	
Centre for Language Learning	B.A. (Hons.) English		
	B.A. (Journalism & Mass Communication) - Media Production		
School of Law (SOL)		BBA - LLB (Hons.)	
		LLB	

ii. Postgraduate Programmes

SCHOOL	DEPARTMENT	PROGRAMME
School of Engg. & Technology (SOET)	Department of Computer Sc. & Engg.	M.Tech. in Computer Science & Engineering
		MCA
	Department of MultiDisciplinary Engineering	M.Tech. in Civil Engineering
		M.Tech. in Electronics & Communication Engineering
		M.TECH. in Mechanical Engineering

SCHOOL	DEPARTMENT	PROGRAMME
NCU School of Business (SOB)		MBA
		MBA (Business Analytics)
School of Management & Liberal Studies (SOM&LS)	Department of Psychology	M.A. Psychology
	Centre for Language Learning	M.A. English
School of Law (SOL)		LLM

1.3 Academic Departments

Each course is offered by an academic department. Some courses are jointly offered by multiple departments and are called interdisciplinary courses. The various academic departments are given a unique two-letter code which is shown in the table below.

NAME OF ACADEMIC DEPARTMENT	DOMAIN	CODE
Computer Science and Engineering (CSE)	Computer Science & Engineering	CS
	Computer Science & Engineering (BCA)	BC
	Computer Science & Engineering (MCA)	MC
Centre for Media & Entertainment (CME)	Sound Engineering	SE
	VFX & Animation	VA
	Visual Communication	VC
	Media & Information Technology	MS
	Game Development	GD
Multidisciplinary Engineering (MDE)	Civil Engineering	CE
	Electronics & Communication Engineering	EC
	Mechanical Engineering	ME
Applied Sciences (APS)	Chemistry	CH
	Mathematics	MA
	Physics	PY
NCU School of Business (SOB)	Business Administration (PG)	BS
Management & Commerce (DoM&C)	Business Administration (UG)	BS
	Commerce	CM
	Economics	EN
Psychology (DoP)	Psychology	PC
Centre for Language Learning (CLL)	English (UG)	CL
	Journalism & Mass Communication - Media Production	JM
	English (PG)	EL
School of Law (SOL)	Law (UG)	LB
	Law (PG)	LM

2. COURSE STRUCTURE AND CREDIT SYSTEM

2.1 Course Credits Assignment

Each course, except few special courses, has a certain number of credits assigned to it depending upon the needs for its Lecture, Tutorial and Practice periods in a week. The weightage of credit is also indicative of the academic expectation that includes in-class contact and self-study outside of class hours. The experts allot an appropriate weight (L-T-P) to the course at the time of designing the scheme/syllabus of the Programme. Fixing L-T-P for a course is an expert decision based on the importance of that course in that programme, regulatory agency guidelines and endorsed by BoS.

The Credit of the course is computed from the weight (L-T-P) of the course and thus the Credit of a course gets indicated in the scheme of the programme. The credits for courses can be computed from its components as below:

Lectures and Tutorials: One lecture or tutorial period per week is assigned one credit.

Practice/Laboratory: One laboratory/ practice period per week is assigned half credit. The Credit of a course thus depends on its L-T-P structure.

Examples:

1. Consider a course having its L-T-P structure as (3-1-2). The credit for this course will be $3+1+1 = 5$.
2. Consider a course having its L-T-P structure as (2-0-1). The credit for this course will be $2+0+.5 = 2.5$.

Courses are also taught in modular form where the total number of hours of a course is considered. E.g. a course with L-T-P of 3-0-2 which is being conducted for the full semester (15 weeks) is taught for 75 hours with 4 credits with the required amount of theory and practical hours.

2.2 Course Numbering Scheme

Each course at the University has a unique number, called as COURSE CODE, which consists of three alphabets, followed by three numerals.

Example and Explanation of a Course Code:

CSL324

In the above course code,

The first two alphabets combined (from left) denote the 'discipline code' of the concerned department offering this course (See section 2.2).

The third alphabet character (from left) denotes the 'nature' of this course. Please see the table shown below for the details about the 'nature' of the various courses.

The fourth character from left is a numeral which denotes the level of the course which determines the maturity required for registering for this course.

100-400 level courses: Core and Elective courses for UG programmes.

500-600 level courses: Core and Elective courses for PG programmes. These courses are not open to any UG student.

700-above level courses: Pre Ph.D. courses.

The last two numerals combined denote the unique identification number for the course. Odd number courses will

run in odd semesters and even number courses will run in even semesters except those which are having zero at the end. The course having zero as the last numeral can run in either semesters.

For load balancing purposes a particular course code may be offered in any semester.

Codes for the nature of the course are as follows:

NATURE CODE	NATURE DESCRIPTION
L	All Lecture Based Courses Excludingn and V Nature of Courses. (other than Lecture Periods, these courses Can have Tutorial and Practical Periods). E.G. L-T-P STRUCTURES 3-0-0, 3-1-2, 3-0-2, 2-0-0, ETC.
P	Laboratory Based Courses, usually Without any lecture (or having at most 1 lecture) per week, E.G. PRACTICAL OR LABORATORY WORK WITH L-T-P STRUCTURES LIKE 1-0-3, 0-0-4, 0-1-3, 1-2- 6, ETC.
D	Project Courses leading to dissertation (major project, minor project, mini project) E.G. L-T-P STRUCTURES 0-0-10, 0-0-6, ETC.
T	Industrial or In-House or Practical Training Type Courses
C	Colloquium (or Seminar)
R	Professional Practice
N	Introduction to the Programme or Introduction to Humanities & Social Sciences, Etc.
S	Independent Study Courses
V	Value Added Courses
M	Mooc Certification Courses

2.3 Earned Credits

At the end of each semester, a letter grade is awarded to a student in each course for which she/he had registered depending upon her/his performance through continuously evaluation and major exam. On obtaining any pass grade in a course, the student owns the course-credits as her/his earned credits corresponding to that course applicable for her/his count while computing SGPA or CGPA. A student's performance is measured by the number of 'earned credits' by her/him, then by the "Points earned" from each amount of "earned credit" and finally by the measure grade point average.

A minimum number of total earned credits are required in a semester for continuation of registration at any stage to the higher semester. A minimum number of total earned credits as specified in the scheme of that programme are also required in order to qualify for a degree at the end of the last semesters as applicable.

2.4 Pre-requisites

Some courses, other than 100 level (first year) courses, have pre-requisites mentioned, which may be another course or some other requirement perceived by programme coordinators depending upon students background. A student may be allowed to take a particular course which has a pre-requisite, if he/she had registered and met the minimum attendance requirements in prerequisite course.

2.5 Course Content Description

Course content description consists of course code, title of the course, credit and L-T-P, pre-requisite and description of the content. Content description for all the courses are given in the section-10. An example is shown here:

MEL306: Machine Design II	(4 Credits; 2-2-0)	Pre-Requisite Course: MEL305
<p>Selection of fits and tolerances (types of fits, fit symbols, fit selection guidelines, selective assembly); Design of bolted joints (types of bolts and screws, standards and terminology, failure modes, critical stresses, preloading effects, tightening torque, systems of bolts under torsion and bending); Design of springs (types and applications, spring materials, manufacturing process, design of helical springs, buckling and surge considerations); Design of gears (types and applications, spur gear tooth profile, gear manufacturing, stress analysis of spur gears, lubrication, design based on tooth bending strength, design based on surface durability); Design for corrosion control (chemistry of corrosion, electrode and electrolyte heterogeneity, techniques to control corrosion, corrosion plus static loads, corrosion plus cyclic loads); Design of brakes and clutches (types, torque transmitting capacity, brake and clutch materials, energy and thermal considerations)</p> <p>Tutorial(T): Solving problems related to the syllabus; Presentations by students related to their course mini projects</p>		

2.6 Programme Coordinator

Programme coordinator is a senior faculty member of the offering department who will coordinate each and every activity related to that programme with all the concerned persons/ departments/ sections/ offices of the University.

2.7 Course Coordinator

Every course is usually coordinated by a faculty member of the offering Department. She/he has the full responsibility for proper conduction of the classes of that course, coordinating the academic work with other faculty members involved in teaching of that course, moderation of grades and submitting all the required information of that course to the programme coordinator in time. In case of any difficulty faced by any student related to a course, the student is expected to approach the respective course coordinator for advice and clarification.

3. REGISTRATION AND ATTENDANCE RULES

3.1 Registration

3.1.1 Purpose

The purpose of registration is to include the name of a student in the roll lists of the courses that the student wishes to study in a particular semester. Registration is a mandatory procedure to be completed personally by the student for each semester on the specified date before the beginning of a semester as given in the Academic Calendar. The registration will be done online through ERP portal and the courses will be visible as per scheme.

3.1.2 Late Registration

Registration after the due date (as specified in the Academic Calendar) will be done only after paying a fine of Rs.1000. This provision will be applicable only for the first two weeks after commencement of classes.

Students will not be allowed to attend classes and will be marked absent during the non-registered status. Non-Registered students beyond two weeks of commencement of classes will lose the entire semester.

3.1.3 Course Counselling

Before the registration, each student must meet the programme coordinator/adviser appointed by the concerned HOD to choose the appropriate courses keeping in view the past performance, his/her interest in a course, backlog of courses etc.

3.1.4 Credit Course

Credit courses are the courses having weightage / credits and the points earned in these courses are used in computation of SGPA & CGPA. Credit courses are placed in various categories like Applied Sciences, Engineering, Language courses, programme core courses, programme elective courses, emerging area elective, open electives etc. as per the requirement of the scheme of the programme concerned.

3.1.5 Practical Training

Before going on Practical training, a student must register for practical training course with the approval of Department Training Coordinator (DTC) concerned and TPO of the institute. A report in the specified format must be submitted within 14 days of the regular semester immediately following the training period.

A regular grade will be awarded after the evaluation process which includes presentation of the report before the department committee convened by the DTC.

3.1.6 Value Added Course

These courses are special topic courses based on industries needs and are meant to enhance employability of students

e.g. personality development, software-based courses, knowledge courses etc.

3.1.7 Minimum Number of Student in a Course

No elective course will run if the number of students registered for a course is less than 20. This may also depend on the availability of a suitable faculty member in the area of the elective. If on the day of registration, the number of those registered is less than the above, the course will be dropped, and registration of the students will be automatically transferred to their next or available choice.

3.2 Attendance rules

A student is expected to attend all lectures, tutorials, practice classes and VA courses etc.

3.2.1 Requirements

The final attendance requirement will be a minimum of 70% per course calculated till the last teaching day. A student not satisfying the minimum attendance requirement in a particular course will be detained in that course.

However, to provide wider exposure to students and increase visibility of the university at State/National & International level, the university encourages, participation of talented students in well recognized competitions or any other such event approved by university. Students nominated / deputed by the University for participation in these events/competitions shall be given due consideration for their absence from classes. This period shall be treated as Leave of Absence for attendance purposes. These leaves of absence shall be endorsed by the Chairman, Student Activities & Leadership committee & approved by the HOD before being sent to the ERP.

All such Leaves of absence shall not exceed 10% of the classes in the semester. The concerned faculty shall ask these students to submit extra assignments to make up for any study losses.

The above requirements will not be relaxed under any circumstances whatever.

3.2.2 Attendance Calculation Norms

For the purpose of calculating attendance in each course, the attendance in the number of scheduled lecture class, tutorial class and practice class (regardless of contact hours in the scheduled classes) will be added.

3.2.3 Detained student

The ineligible student will be placed in 'Detained' category for the course and the registration for that particular course will be cancelled and 'Detained' will be mentioned in the grade sheet. The student has to again register for the same course in subsequent regular semester as early as possible, provided credits requirement is met and time table permits, if it is a programme core. Otherwise, the course can be substituted by another course in the same category if it happens to be an elective course or a non-compulsory course, provided the course can be run keeping in view other constraints like

- i. Minimum number of students in the course, as decided from time to time.
- ii. Faculty availability and
- iii. Availability of Slot / Time table.

Note: Students shall require paying fee for re-appear courses as per university norms (as applicable from time to time).

3.2.4 Midterm Warning for Short attendance

There will be a provision for issuing a written warning to the students if in any course, his/her attendance falls below 70% in any course till the completion of approximately half the number of teaching days in a semester as mentioned in the Academic Calendar for the semester concerned.

4. GRADING SYSTEM

4.1 Introduction

The grading system reflects a student's proficiency in the course. The grade awarded to a student in a course will be based on the performance of the student in Minor test, assignment, viva-voice, lab work, online test, seminar, workshop presentations, group discussions, quiz, etc. whichever be applicable as per scheme and in the Major test, at the end of the summer (or at the end of the summer semester if there are any courses to be taught during summer).

In a course, every candidate will be examined as per the syllabus of the concerned programme approved by the Academic Council from time to time. The credits and contact hours per week have been specified for each course in the syllabus.

Appearing in the Major test of a course will be allowed to a regular student if: -

- i. She/he has been on the rolls of the University during the semester, and she/he has satisfied the attendance criteria in the course as per the Attendance Rule (see Section 3.2).
- ii. There is no pending case of indiscipline in his/her name, and
- iii. She/he is not a defaulter in payment of tuition fee or any other dues of The NorthCap University, Gurugram in any case.

4.2 Grades and Grade Points

The University follows a relative grading system. Corresponding to each course registered, a student obtains a letter grade at the end of the semester (i.e. at the end of the semester, irrespective of his presence/absence in the examination).

There are Eight (08) types of grades awarded in The NorthCap University to the students as mentioned in the following table:

ACADEMIC PERFORMANCE	LETTER GRADES	GRADE POINTS
Outstanding	A+	10
Excellent	A	9
Very Good	B+	8
Good	B	7
Average	C+	6
Below Average	C	5
Marginal	D	4
Fail	F	0

Note:

- i. "D" or above grades are pass grades for credit courses.
- ii. In a credit course, if a student obtains any pass grade, she/he earns Points from this course in the semester concerned.

Earned Grade Points = Credit of the course × Grade Points

4.3 Evaluation System

The performance of the student in the credit-grading system is evaluated throughout the semester. The methodology used for evaluation is tabulated on next page:

S.No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (L-0-0)/ (L-T-0)/ (L-0-P)*	Minor Test	25%	Must Secure 30% Marks Out of Combined Marks of Major Test Plus Minor Test with Overall 40% Marks in Total.
		Major Test	45%	
		Continuous Evaluation Through Class Tests/Practice/ Assignments/Prese ntation/Quiz	20%	
		Online Quiz	10%	
2	Theory+ Practical (L-T-P/L-0-P)	Minor Test	15%	Must Secure 30% Marks Out of Combined Marks of Major Test Plus Minor Test with Overall 40% Marks in Total.
		Major Test	35%	
		Continuous Evaluation Through Class Tests/Practice/ Assignments/Prese ntation/Quiz	10%	
		Online Quiz	5%	
		Lab Work	35%	
3	Practical/ Practice or for The Courses of (1-0-P) (0-0-P)	Regular Practical/Practice & Report Writing	70%	Must Secure at Least 40% Marks in Total.
		End Semester Practical/Drawing Tests Including Viva-Voce	30%	
4	Project Based Course (L-T- P/L-T-0/L-0- P/L-0-0)	End Term Project	40%	Must Secure 30% Marks Out of Combined Marks of End Term Project Plus Major Test with Overall 40% Marks in Total.
		Major Test	35%	
		Class Test/ Assignment	15%	
		Class Participation Evaluation Through Class Tests/Practice/ Assignments/Prese ntation/Quiz	10%	
5	Theory+ Project (L-T- P/L-T-0/L-0- P/L-0-0)	Minor Test	20%	Must Secure 30% Marks Out of Combined Marks of Major Test Plus Minor Test with Overall 40% Marks in Total.
		Major Test	35%	
		Group Project	25%	
		Continuous Evaluation Through Class Participation/Assignments/Quiz/ Online Quiz	20%	

* - Course(s) without prescribed lab work.

NOTE:

- The courses like General Proficiency, Community Service, Seminar, Minor/Major Project, Summer Internship/ Industrial Training, Dissertation will be evaluated out of 100 marks.
- The courses registered on NPTEL/SWAYAM portal will be evaluated out of 100 marks as MOOC courses, with a marks distribution of 70-30 or 75-25 (Proctored Exam/Online Assessment) for all students, whether in Regular or Re-Appear mode.

The evaluation of course like Practical training, seminar and dissertation are performed in different manners and discussed as follows:

- i. **Practical Training:** A student has to undergo practical training twice during his/her B.Tech programme for the specified period mentioned in the syllabi of the training courses, first after fourth semester and second after sixth semester during the summer vacations. Then, she/he will be registered for the practical training course in next semester. The training coordinator of the department will scrutinize the training report and certificates and will arrange the presentation of students in front of the committee constituted by the HOD for the purpose. A regular grade will be awarded by the committee.
- ii. **Seminar:** A topic is usually chosen by a student which is required to get approved by the departmental committee made for the purpose. The evaluation will be done by a seminar evaluation committee to be constituted by the HOD concerned. They will follow their own methodology for awarding grade.
- iii. **Project/Dissertation:** The projects can be done in-house (The NorthCap University campus) or in any industry. The in-house project may be fabricated into working model which has a long-lasting value for the institute and give knowledge enhancement practical orientation and a sense of satisfaction to the students. Students are endorsed in doing the project in an industry and they can do so after getting the prior approval from the Departmental Project Committee.

The following points need attention by the student regarding project/dissertation evaluation purpose:

- i. All students are assigned internal guides for their project by their department.
- ii. If the project is done in an industry, there should be an external guide in the industry where the project is being done, in addition to the internal guide (from the Department/Institute).
- iii. The internal guide will visit the project site at least once during the course of the project. The internal guide should also have constant interaction with the external guide and monitor the progress of the students. (Applicable to S. No. ii)
- iv. Students have to finalize their project title, the guide, their batch mates, and the place of work and the schedule of work along with 'Gantt Chart' (activity chart) and submit to the Departmental Project Committee as notified by the departments.
- v. A project diary (a Project/Training Diary is provided by the department to each student having Project/Training as a part of the curriculum) will have to be maintained by every student.
- vi. The project work is intended to inculcate the following in the students.
 - Project planning & scheduling skills (Project Management)
 - Practical experience
 - Team working
 - Creativity and research orientation
 - Report writing skills
- vii. Final Year B.Tech. project work may be done individually or in a group not exceeding 4 students.
- viii. There should be continuous evaluation of the students' performance in the project work and evaluation plan should be notified by the department well in advance.
- ix. Project review and evaluation will be done by a Project Evaluation Committee constituted by the Departmental Project Committee. The Project Guide, the Project Co-ordinator must be members of the Project Evaluation Committee.

- x. The final viva-voice will be conducted as per the schedule given by the Controller of Examinations. The evaluation during the final viva-voice will be done jointly and in the presence of both internal and external examiners (appointed by the Controller of Examinations). The evaluation will be done as per distribution mentioned in "Project Evaluation Form".
- xi. External examiners for evaluation of B.Tech projects shall be interdisciplinary faculty from within the University.
- xii. Any extension required to be given to any project shall require formal approval of Hon'ble VC through proper channel.

The marking scheme is divided into two sections. The following is the breakup regarding the marks in the project/ Dissertation:

SECTION	CATEGORY	MARKS
A (Mid Term Evaluation)	Committee Assessment	20%
	Supervisor's Assessment	10%
B (End Term Evaluation)	Quantum of Work (demonstration of the model if any)	15%
	Written Report	15%
	Presentation	10%
	Answering Questions	10%
	Supervisor's Assessment	20%

4.4 Grading Method

The NorthCap University is having relative grading system. The grading reflects a student's own proficiency in any course. In relative grading, students are in competition with one another for a limited number of grades in each category, and a student's grade is based on his/her relative position in the class.

This system is well established and working well in leading university and accounts for tests that are too hard or too easy, too strict or too lenient evaluation etc.) because the scale automatically moves up or down. Students appreciate relative grading for much the same reason.

The key features of the "Relative Grading" methodology adopted at The NorthCap are as follows:

- i. Marks have no absolute correlation with grades. The relationship between the marks obtained and the grade awarded in a course is relative, based on the average performance of the batch in that course.
- ii. A minimum of 80% marks will be required for getting "A+" grade (Highest Grade). However, mere getting 80% marks will not make any student entitled for getting an "A+" Grade. Hence, it is a necessary condition, but not the sufficient one.
- iii. Minimum 40% Marks (with at least 40% in theory) is required to get a "D" grade (Lowest pass grade).
- iv. "Standard deviation technique" of relative grading will be adopted to grade student's performance in a course having more than 40-45 registrations, as it is expected to follow a normal distribution. In this system student grades are based on their distance from the mean score for the class rather than on an arbitrary scale.

- v. "Clustering approach with natural gaps" of relative grading will be adapted to grade student's performance in a course having less than 40-45 registrations. In this method, students' total course scores are arranged in descending order and the teacher looks for naturally occurring gaps in the distribution of the scores to decide the marks spread for any grade. This reduces variance of marks within a grade.
- vi. Moderation of grades shall be done by a committee chaired by Dean/Head of School/Department/Centre.

4.5 Grade Point Averages – SGPA and CGPA

There are two types of Grade Point Averages (GPA), which are:

Semester Grade Point Average (SGPA)

Cumulative Grade Point Average (CGPA)

While SGPA is a measure for a semester performance only, CGPA is a measure of performance upto any specified semester beginning from the first semester. Every student earns a distinct SGPA and a distinct CGPA at the end of each specified semester.

4.5.1 Calculations of SGPA for a Semester

All the courses for which a student has registered in the semester and awarded one of the A+, A, B+, B, C+, C and D grades in this semester are considered for computing SGPA.

The Mathematical Formula

Where, SGPA

$$SGPA = \frac{\sum C_i P_i}{\sum C_i}$$

C_i = Course Credit of the course of a semester for which SGPA is to be calculated for a student.

$C_i P_i$ = Grade Point earned by the student in the course.

$i = 1, 2, 3, \dots, m$, represents the number of courses passed as per table in section 4.3 in that semester.

4.5.2 Calculation of CGPA up-to a Semester

All the courses for which a student has registered up-to that semester beginning from the first semester and awarded one of the A+, A, B+, B, C+, C & D grades are considered in computing the CGPA upto a specified semester.

The Mathematical Formula

Where, CGPA

$$CGPA = \frac{\sum C_j P_j}{\sum C_j}$$

C_j = Credit of the course in which the student has passed as per the table in section 4.3.

$C_j P_j$ = Grade Points earned in the course

$j = 1, 2, 3, \dots, n$, represents the number of courses in which the student has passed till that semester.

4.5.3 A Hypothetical Example Showing Computation of SGPA and CGPA

Consider the performance of a student Mr. Z in Semester-I, as mentioned below (supposing that Mr. Z has registered for the following five courses as per his scheme).

COURSE NO.	TYPE OF THE COURSE	COURSE CREDIT	GRADE AWARDED (TO THE STUDENT)	EARNED CREDITS (BY THE STUDENT)	EARNED GRADE POINTS (BY THE STUDENT)	POINT EARNED (BY THE STUDENT)
ECEXXX	Core	5	C+	5	6	30
CSLXXX	Core	4	C	4	5	20
CSLXXX	Core	4	A+	4	10	40
CELXXX	Core	2	B+	2	8	16
MELXXX	Elective	4	D	4	4	16
Total =		19		19		122

From the above table, the following are computed:

Credits registered by Mr. Z in this Semester-I is = 19 ; Earned credits in this semester = 19

Points Earned by Mr. Z in this semester = 122

$$\text{SGPA} = 122/19 = 6.42$$

$$\text{CGPA} = 122/19 = 6.42$$

Semester-I performance:

$$\text{SGPA} = 6.42$$

$$\text{CGPA} = 6.42 \text{ (Upto Semester-I)}$$

Now, consider the performance of the same student Mr. Z in Semester-II, as mentioned below (supposing that Mr. Z has registered for the following five courses as per his scheme).

COURSE NO.	TYPE OF THE COURSE	COURSE CREDIT	GRADE AWARDED (TO THE STUDENT)	EARNED CREDITS (BY THE STUDENT)	EARNED GRADE POINTS (BY THE STUDENT)	POINT EARNED (BY THE STUDENT)
CELXXX	Core	5	B+	5	8	40
CSLXXX	Core	4	F	0	0	00
CSPXXX	Core	2	B	2	7	14
CSLXXX	Core	4	D	4	4	16
MELXXX	Elective	4	A+	4	10	40
Total =		19		15		110

From the above table, the following are computed:

Credits registered by Mr. Z in this Semester-II is = 19 ; Earned credits in this semester = 15

Points Earned by Mr. Z in this semester = 110

$$\text{SGPA} = 110/15 = 7.33$$

Points Earned in all semesters done so far = 122 (total of all previous semesters) + 110 (current semester) = 232

Credits Earned in all semesters done so far = 19 (total of all previous semesters) + 15 (current semester) = 34

$$\text{CGPA} = 232/34 = 6.82$$

Semester-II performance:

$$\text{SGPA} = 7.33$$

$$\text{CGPA} = 6.82 \text{ (Upto Semester-II)}$$

4.6 Performance Classification

A student has to be declared eligible for award of the degree as per section 5.1 & 5.2 for UG and section 6.1 & 6.2 of this ordinance for PG students.

Classification of performance of the students at the end of the programme (after completing all the programme requirements) will be based on CGPA (Cumulative Grade Point Average) earned, as indicated below:

CLASSIFICATION OF PERFORMANCE FOR UG PROGRAMMES	CGPA
First Class with Distinction	8.50 & above and have passed all courses in first attempt
First Class	6.00 to 8.49
Second Class	4.50 to 5.99
Not Successful	Below 4.50

CLASSIFICATION OF PERFORMANCE FOR PG PROGRAMMES	CGPA
First Class with Distinction	8.50 & above and have passed all courses in first attempt
First Class	6.00 to 8.49
Second Class	5.00 to 5.99
Not Successful	Below 5.00

4.7 Moderation of Grades

Moderation of grades is required to minimize the effect of individual marking/checking techniques. Moderation of grades shall be done by a committee chaired by Dean/Head of School/Department/Centre.

4.8 Dean's List

The Dean's List is generated based on mentioned below eligibility criterion:

A student of any Programme of The NorthCap University (NCU) is eligible to be featured in the Dean's List of any Semester Result if:

He/She has scored 9.50 CGPA or above in that semester result

He/She has secured top position (First position) in the batch of that programme (across all sections) and has a minimum CGPA of 9.00.

Note: A student has to pass all courses in single attempt to become eligible for featuring in the Dean's list of any semester.

4.9 Conversion from CGPA to Percentage

The formula to convert CGPA to Percentage is percentage = (CGPA X 10)

5. UG DEGREE REGULATIONS AND PERFORMANCE MONITORING

5.1 Degree Requirements

All the following requirements are mandatorily to be fulfilled for award of a UG Degree:

- i. Completion of earned credits as specified in the scheme of each UG Programmes.
- ii. Obtaining a minimum CGPA of 4.50 at the end of the programme.
- iii. If a student completes required credits for UG with CGPA less than 4.50, he/she may be allowed to do additional elective course under any category to improve the CGPA within the maximum time limit for the completion of UG degrees.
- iv. Completion of practical training as prescribed by the concerned department.

5.2 For continuation of registration at the end of every Academic year

The following rules will be applicable:

To be eligible for continuation of registration at the end of every Academic Year (including summer semester), the number of earned credits for a student should not be less than those specified in the table below:

For 5 Years UG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	10% of total credits of the programme
2	II	20% of total credits of the programme
3	III	35% of total credits of the programme
4	IV	50% of total credits of the programme
5	V	65% of total credits of the programme
6	VI	80% of total credits of the programme
7	VII	100% of total credits of the programme

For 4 Years UG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	10% of total credits of the programme
2	II	25% of total credits of the programme
3	III	40% of total credits of the programme
4	IV	60% of total credits of the programme
5	V	80% of total credits of the programme
6	VI	100% of total credits of the programme

For 3 Years UG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	10% of total credits of the programme
2	II	30% of total credits of the programme
3	III	50% of total credits of the programme
4	IV	70% of total credits of the programme
5	V	100% of total credits of the programme

5.3 Maximum Time to Complete the Degree

The maximum time for completion of UG degree is seven years, six years and five years for 5, 4 and 3 Years UG Programmes respectively.

6. PG DEGREE REGULATIONS AND PERFORMANCE MONITORING

6.1 Degree Requirements

All the following requirements are mandatorily to be fulfilled to get PG Degree:

- i. Completion of earned credits as specified in the scheme of each PG Programme.
- ii. Obtaining a minimum CGPA of 5.00 at the end of the programme.
- iii. If a student completes required credits for PG with CGPA less than 5.00, he/she may be allowed to do additional elective Course under any category to improve the CGPA within the maximum time limit for the completion of PG degree.
- iv. Completion of practical training as prescribed by the concerned department.

6.2 For continuation of registration at the end of every Academic Year

The following rules will be applicable:

To be eligible for continuation of registration at the end of every Academic Year (including summer semester), the number of earned credits for a student should not be less than those specified in the table below:

1 - Year PG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	30% of total credits of the programme
2	II	65% of total credits of the programme
3	III	100% of total credits of the programme

2 - Year PG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	20% of total credits of the programme
2	II	45% of total credits of the programme
3	III	70% of total credits of the programme
4	IV	100% of total credits of the programme

3 - Year PG Programme

S. NO.	ACADEMIC YEAR	MINIMUM NO. OF EARNED CREDITS (EC)
1	I	10% of total credits of the programme
2	II	30% of total credits of the programme
3	III	50% of total credits of the programme
4	IV	70% of total credits of the programme
5	V	100% of total credits of the programme

6.3 Maximum Time to Complete the Degree

The maximum time for completion of PG degree is 3 years, 4 years and 5 years for 1, 2 and 3 Years PG Programmes respectively.

7. MANAGEMENT OF RE-APPEAR STUDENTS

NCU has a very comprehensive policy to manage re-appear students. There are two categories of re-appear students. First is "Detained students" who have not met minimum attendance requirement as mentioned in Para. 3.2 and second is "Failed students" who have not secured minimum passing marks as mentioned in Para. 4.3.

The rules in this regard are summarized below: -

i. Detained Students:

Detained students will require registering under "Regular Study Mode" only and will require attending regular classes with junior batches as per the availability of time-table.

In case of clashing of re-appear courses with courses of regular semester, detained students will have to drop one or more course of regular semester.

If no free slots are available during the regular duration of the programme, such students will attend classes of re-appear course(s) after the completion of the programme, but within the maximum duration allowed for the programme.

University will not be responsible for providing free slots for such cases.

ii. Failed Students:

Failed students will be allowed to register under "Supplementary Exam Mode" as and when the course is offered, but within the maximum period of completion of programme.

Students registering under "Supplementary Exam Mode" will be allowed to appear in Minor Test as well along with Major Test to pass a course. Marks under other heads remain unchanged.

NOTE:

- i. Students opting for re-appear in detained/failed course(s) through the on-campus course(s), requires paying fee as per university norms (as applicable from time to time).
- ii. A student is allowed to opt for MOOC course(s) on approved online platforms, duly approved by the School/Department/Centre as per the university guidelines, to re-appear in detained/failed course(s) and no fees will be charged by the university.

8. SUMMER SEMESTER

Summer Semester is a common feature throughout the world to cater to student's backlog courses. This facility not only helps students but also considerably reduces the burden of failures on the entire system. Summer semester is optional for the students. Classes shall be conducted during the months of June and July for such students as per the academic calendar, provided the Department/School finds it feasible to run the courses with available resources.

GENERAL ASPECTS: Summer semester will be of 6 weeks duration in the month of June-July every year, which will take care of classes as well as the evaluations. The teaching scheme, the syllabus and the course credits for each course offered in the summer semester shall be the same as that in the approved scheme & syllabus, in force, for the respective course in a programme. The total number of contact hours for the course shall be compressed (up to 80%) and therefore, the courses run at an accelerated pace, (For example 9 hours of instruction per week is expected for a 3-0-0 course). The registration, examination and assessment and grading etc. shall be carried out in the same way as being carried out for regular semester courses. Calendar for the summer semester shall be notified separately by the Dean Office.

ELIGIBILITY CRITERIA: Any final year student who is either "detained" or "Fail" in a course will be eligible for summer semester.

REGISTRATION: The students eligible for registration in summer semester will have to apply, by filling-in, the requisite form with two passport size photos for the purpose, available at the Dean Office duly signed by HOD. A student will be permitted to register for a maximum of 3 courses. The registration fees shall be ₹20000/- (Rupees Twenty Thousand) per course. The duly filled-in application form will have to be submitted by the due date stipulated by the Dean Office, along with the fee receipt.

Any applications received after the due date, or for which the stipulated fees are not paid by the due date, shall be rejected. The total number of students who can register for a course will not be bound by any limit - except as per the discretion of the University.

Attendance, Examination & Evaluation:

- i. A student, who has registered in a course, will be required to have a minimum of 85% attendance, to qualify for appearing in the Major test of the summer semester.
- ii. The evaluation scheme of a course offered during the summer semester shall be the same as that in the approved curriculum.
- iii. The Minor test shall be conducted in the third week of the commencement of the semester. The exact dates for the same are mentioned in the Academic Calendar.

9. RE-MAJOR TEST

NCU has the provision to conduct Re-Major Test during the summer in a very limited numbers to cater for extremely exceptional failure cases.

The eligibility guidelines in this regard are summarized below:

- i. Student(s) leading to "Year loss" due to failure in only one course.
- ii. Student(s) missing placements or joining after placements obtained through CPAAE due to failure in only one course.
- iii. Mass failures (at least 33% failure) in any course.
- iv. Re-Major Test opportunity in accordance to S. No. (i & ii) will be available to any student only once in his/her whole programme.

REGISTRATION: The students eligible for registration in the re-major test will have to apply, by filling in the requisite form with two passport size photos for the purpose, available at the COE Office (Room No. 116) duly signed by HOD. (Eligible list will be shared by the Academic Office NCU in the last week of June). A student will be permitted to register for a maximum of one course. The registration fees shall be ₹1000/- (Rupees One Thousand only) per course. The duly filled-in application form will have to be submitted by the due date stipulated by the COE Office, along with the fee receipt. Any applications received after the due date, or for which the stipulated fees are not paid by the due date, shall be rejected.

Note: Students shall require paying fee as per university norms (as applicable from time to time).

10. CGPA IMPROVEMENT

A policy on CGPA improvement scheme has been introduced for those students who after completing the requirements of their Programme; pass the Degree in second class (less than 6.0 CGPA) or miss their degrees (CGPA less than 4.5 for UG and 5.0 for PG programmes). The policy is prepared to help students missing First class or pass by a small margin. The following are the features of the NCU Policy.

- i. A student who after completing all the requirements of a Programme passes the Degree in second class i.e. (CGPA less than 6.0) or misses the Degree i.e. (CGPA less than 4.5 for UG and 5.0 for PG programmes) will have the option of improving the CGPA during immediate next one year, subject to duration of the programme not exceeding the maximum duration prescribed for it as per NCU norms.
- ii. A student will be required to submit a request for opting for CGPA improvement scheme to Dean Office immediately after the completion of the degree. Once the Degree certificate is issued, no such request will be acceptable under any circumstances.
- iii. Under this scheme, a student will select a maximum of six courses from across semesters for which he/she may register in one of the following examination modes during immediate summer semester or in next two regular semesters by filling-in the requisite form available at the Dean Office, duly signed by HOD:
 - **Supplementary Mode:** In this mode, students will appear for Minor & Major Tests of the course. Here, Internal Marks (CIE Marks) of the course will remain the same as those obtained earlier.

- **Regular Study Mode:** In this mode, students will require attending classes for the course, keeping attendance requirement intact. Here, students will require obtaining marks under all categories. A student can take a few courses out of the selected courses in Supplementary Mode and others in Regular Study Mode as well. Option of "Regular Study Mode" for any course during summer semester is subject to availability of faculty resource. Also, this option (Regular Study Mode) will be available during regular semesters for those courses only which are already running in that semester.
A student is also allowed to take additional courses related to the programme under this scheme, provided the same are running as regular courses for existing batches.
- iv. The newly secured "Letter Grades" will only be recorded and taken into account for calculation of SGPA and CGPA for courses registered under "Regular Study Mode". However, for courses registered under "Supplementary Mode", the same will be done only if there is an improvement.
- v. The final scored CGPA will be capped up to 6.00 under this scheme.
- vi. Under this scheme, during summer semester, the University will charge ₹3,000/- (Rupees three thousand only) per course for courses registered under "Supplementary Mode" and ₹20,000/- (Rupees twenty thousand only) per course for courses registered under "Regular Study Mode".
- vii. Under this scheme, during regular semesters (Odd or Even Semester), the university will charge ₹1,500/- (One thousand five hundred only) per course for courses registered under "Supplementary Mode" and ₹10,000/- (Rupees Ten thousand only) per course for courses registered under "Regular Study Mode".
- viii. The student must carefully read the policy and make an assessment on his own whether after opting for Supplementary Mode or Regular Study Mode for the maximum number of courses permitted to appear; he/she is likely to achieve the desired objective.

11. PROGRAMME/ BRANCH TRANSFER

11.1 For engineering students:

SOET UG students can transfer from one branch to another after completing two semesters (one year). Student needs to apply to the Vice Chancellor for Branch change (through HoD). Permission to transfer branch is given only as per the rules and guidelines approved by the Academic Council.

11.2 For Management, Law & Sciences students:

- i. The UG students of SOB, SOM, SOL can transfer from one undergraduate programme to other immediately after the first year. The inter and intra school migration is possible between various programmes as bulk of the courses in UG programmes of SOB, SOM, SOL are common in first year. Student needs to apply to the Vice Chancellor for Programme change (through HoD).
- ii. The decision of the Vice Chancellor shall be final & binding for any case of branch/programme transfer.

12. DEPARTMENT WISE PROGRAMME STRUCTURE

The following sections provide a comprehensive overview of the programme structure for each department, covering both UG and PG programmes. These pages outline the courses categorized by subject areas and detail the credit requirements for each category. To successfully graduate, students must fulfill all the credit requirements specified in their programme structure.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

The Department has earned a formidable reputation of providing an impeccable quality of education since 1996. The department provides adequate opportunities for student and researchers to learn and innovate and constantly modernizes the infrastructure and lab facilities through NCU as well as industry. The department has distinguished faculty, most of them holding M. Tech / PhD degree from renowned institutes in India and abroad.

Programmes offered by the Department:

1. Master of Technology in Computer Science & Engineering with specialization in:

- Cyber Security & Forensics
- Data Sciences

2. Master of Computer Applications

3. Bachelor of Technology in Computer Science & Engineering with specialization in:

- Full Stack Development
- Cyber Security & Forensics
- Blockchain
- Cloud Computing
- Artificial Intelligence and Machine Learning
- Data Science
- Gaming, Augmented Reality and Virtual Reality
- Internet of Things and 5G
- Semiconductor Technology

4. Bachelor of Computer Applications with specialization in:

- Web Application Development
- Mobile Applications
- Animation and Gaming

i. M.Tech CSE with Specialization in Cyber Security & Forensics

"There are only two types of companies: those that have been hacked, and those that will be"

by Robert Muelier

FBI Director clearly states the requirement of Cyber Security in day-to-day lives. M.Tech CSE with specialization in Cyber Security expands your knowledge in a specific field while increasing your earning potential. The comprehensive curriculum involves a solid foundation in key technology including penetration testing, network security, cryptography, risk analysis and assessment, etc. Further, it includes a research thesis project as part of the programme gives you a chance to focus on a specific area of interest.

Market Trends of Cyber Security & Forensics:

- The growth of enterprise spending on information security in India will continue to grow unabated to reach over US\$2 billion in 2024. (Gartner)
- The majority (51%) of organizations do not believe they are ready or would respond well to a cyber-attack or breach event. (FireEye)
- The number of cyber security job postings has grown 94% in just six years. (Burning Glass)

Unique Selling Points of the Specialization:

- The M.Tech. programme is designed for those who want to extend their technical and programming skills to handling cyber security and forensics challenges.
- Learn to stay updated on rapidly changing technology, adapt and control to new threats and anticipate potential cyber-attacks.
- Real-life case studies to cover the various aspects of digital forensics, including investigating network intrusions and mobile forensics to obtain data related to computer crimes.
- Hands-on sessions to enhance their knowledge and skills to apply penetration testing to exploit and investigate vulnerable systems, secure coding practices, etc
- In-depth analysis of modern malware samples using Static and Dynamic analysis techniques to break down potential malware threats, create solutions to combat them, and protect against malware in the future.
- Include the process of network security, including intrusion detection, collect evidence of network intrusions, test networks and systems for vulnerabilities.
- Learn key principles of risk analysis, risk assessment and risk mitigation for information security using both qualitative and quantitative methodologies.
- Industry aligned curriculum, designed by Industry Experts
- Well-trained and qualified faculty
- Research Guidance & Mentoring by doctoral faculties and renowned academicians.
- Blended Learning 24 x 7
- Well Equipped Labs for hands on learning

ii. M.Tech CSE with Specialization in Data Science

"Data is a precious thing and will last longer than systems themselves"

by Tim Berners-Lee

Data Science is an interdisciplinary field that is capable of extracting insights from shapeless data and convey their findings in a language that their business stakeholders can comprehend. Job Opportunities are in the profile for as a Data Scientists, Data Engineer, Machine Learning Engineer, Data Analyst and NLP Engineer. M-Tech CSE with Data Science specialization offers students with theoretical and practical knowledge of computational tools that are the need of real world applications such as health sector, banking sector, agriculture, linguistics, bioinformatics, economics, education, social network analysis etc. The curriculum lays the foundation of Data Science including Machine Learning, Deep Learning, Big Data, Natural Language Processing etc. Further, it includes a research thesis project as part of the programme which provides you with an opportunity to focus on area of your interest.

Market Trends of Data Science:

- Data Analytics Market is expected to grow at a CAGR (Compound Annual Growth Rate) of 30.08% from 2020 to 2023, which would equate to \$77.6 billion.
- The global big data and business analytics market was valued at \$168.8 billion in 2018 and is forecasted to grow up to \$274.3 billion by 2022 at a CAGR of 13.2%.
- Overall, the analytics industry currently accounts for almost 21% of the whole IT/ITeS industry in India.
- Around 22,000 freshers were added to analytics workforce in India this year, up from 16,000 freshers last year. Hiring for freshers has increased by 37%.

Unique Selling Points of the Specialization:

- The programme is designed for those who want to extend their technical and programming skills in analysing, visualizing and predicting future trends in data.
- Industry-oriented curriculum which enables the students to prepare for technical careers in developing applications and providing help in decision-making processes to the business with a focus towards applying machine learning knowledge for the business profits.
- AI-driven technology can help businesses save money by streamlining inventory management, making production more efficient, and predicting equipment breakdowns before they happen.
- Machine learning techniques to automatically find the valuable underlying patterns and predict future events and perform all kinds of complex decision making.
- Hands on Big Data Technology like Hadoop, Dask, Spark, Hive etc. through Cloud platform helps in taking better business decisions as well as the future steps to enhance organizations productivity.
- Industry aligned curriculum, designed by Industry Experts with hands on experience.
- Well-trained and qualified faculty.
- Project Guidance and Mentoring by Industry Experts.
- Active participation of faculty and students in competitions.
- Blended Learning 24 x 7.
- Well Equipped Labs for hands on learning.

iii. Master of Computer Applications

MCA (Master of Computer Applications) is a two-year post-graduate degree programme. In this programme, students learn technological applications that are required in today's practical work field. Getting a Master's degree in Computer Applications offers a number of opportunities for individuals to go ahead and shine in their lives. The highly coveted job roles available for students pursuing MCA include Software programmes, System and Network Administrators, Web Designers, Faculty for Computer Science/ Communication Technology, etc. The proposed degree's mission is to develop competent professionals with analytical skills and independent thinking for a productive career in industry, academia and administration. After doing a Master of Computer Applications (MCA), one can go for higher education, research or take up various jobs and also take up internships to prepare for entering the industry. The curriculum includes significant flexibility so that students can benefit from more professionally focused degree and gain expertise in database management, operating system, and programming languages.

Highlights of the Programme

- A programming application and research-oriented course structure with a complete blend of courses from basic sciences, management and foreign language courses in the curriculum apart from the computer science courses.
- Holistic development through colloquium, seminar and community service.
- Hi-tech learning environment with well-equipped research laboratories to facilitate hands on experience.
- Understanding software project management
- Natural language processing with NLTK packages
- Applications of image processing with the latest tools
- Proficiency in dynamic and robust programming languages
- Research and dissertation work in the pre-final and final semesters.

iv. B.Tech. in Computer Science and Engineering with specializations

• Full Stack Development

“Coding is like writing, and we live in a time of the new industrial revolution. What’s happened is that maybe everybody knows how to use computers, like they know how to read, but they don’t know how to write”

by Susan Wojcicki

CEO of YouTube, clearly signifies that coding is one of the most valuable skills anyone can learn today.

B.Tech CSE with Full Stack specialization prepares the student to become an expert at Front-end and Back-end technologies by employing the most popular JAM (Java, Angular and MongoDB) Stack. Students will learn to create web applications from the ground-up with the right engineering disciplines and methodologies in a corporate aligned culture with detailed emphasis on Dev-Ops and Agile (SCRUM) principles.

• Cyber Security & Forensics

“In Cyber security, the more systems we secure, the more secure we all are”

by Jed Johnson

Former United States Secretary of Homeland Security emphasize on securing the digital world.

B.Tech CSE with specialization in Cyber Security & Forensics equips students with the foundation concepts underlying the secure systems. The curriculum involves hands-on practice sessions to develop skills required for understanding vulnerabilities of existing systems and building systems that defend against escalating cyber threats.

• Blockchain

Blockchain is becoming an inevitable phenomenon owing to the core-enabling technologies and significant opportunities it offers to digital businesses. With numerous businesses across various industry verticals adopting blockchain at a rapid pace, it is evident that blockchain is transforming into a movement and is steadily moving towards the next phase of the blockchain revolution. B-Tech CSE with Blockchain specialization includes a blend of theoretical concepts and practical practice sessions to enable students understand and implement Blockchain based applications. The curriculum lays a strong mathematical foundation of Blockchain fundamentals covering the structure of Blockchain to designing of own Blockchain. The technologies like Big data. Cloud and Web development are also included with Blockchain’s perspective.

• Cloud Computing

“At this point, cloud adoption is mainstream, and Adoption of next-generation solutions are almost always ‘cloud-enhanced’ solutions”

by Sid Nag

Research Vice President at Gartner, clearly signifies that all organizations would build on the strengths of a cloud platform to deliver digital business capabilities.

B.Tech. CSE with Cloud Computing specialization offers students with theory and practice to enable them to understand and implement cloud-based applications. The curriculum lays the foundation of cloud computing fundamentals covering all major service providers including Google cloud, AWS and Microsoft Azure.

- **Artificial Intelligence and Machine Learning**

“Our intelligence is what makes us human, and AI is an extension of that quality.”

by Yann LeCun, Professor, New York University

B-Tech CSE with Artificial Intelligence and Machine Learning specialization offers students with theoretical and practical knowledge of computational tools that are the need of real world applications such as linguistics, health, bioinformatics, economics, education, social network analysis, games etc. The curriculum lays the foundation of Artificial Intelligence and Machine Learning fundamentals including Probability and Statistics, Tensorflow, Applied Artificial Intelligence, Natural Language Processing, Robotics, Computer Vision etc. Companies such as Google, IBM, Microsoft, and other leading players have actively implemented AI as a crucial part of their technologies.

- **Data Science**

“We are drowning in information and starving for knowledge”

by John Naisbitt

B-Tech CSE with Data Science specialization offers students with theory and practice to enable them to understand and implement business-based applications. The curriculum lays the foundation of data science fundamentals including Probability and Statistics, Data Engineering, Machine Learning, Google Cloud Platform, Tableau, Knime etc. With a focus towards the ability to unravel insights from shapeless data and convey their findings in a language that their business stakeholders can comprehend, data science experts are needed in virtually every job sector—not just in technology.

- **Game Tech, AR & VR**

“You can push the bounds of your imagination and we have the resources tailored to bring your immersive vision to life”

by Unity

B-Tech CSE with Gaming AR, VR specialization offers students with in-depth knowledge which will enable them to understand and industrial usability and implementation of Game technologies, Augmented and Virtual reality applications/simulations. This specialization gives an opportunity by working with these technologies and a focused degree with strong tech foundation, combining rigorous taught components with studio based learning and critical thinking.

- **Internet of Things and 5G**

“The Internet of Things is not a concept; it is a network, the true technology-enabled Network of all networks.”

by Edewede Oriwoh

IoT and 5G are the dynamic duo reshaping the digital landscape. With 5G's lightning-fast speed and low latency, coupled with the vast connectivity of IoT, it is considered as a transformative era where every object becomes smart, every process becomes efficient, and every experience becomes extraordinary. B.Tech. CSE with specialization in IoT and 5G unlocks a realm of endless possibilities, where students will learn the IoT and 5G technologies and come with innovative ideas.

- **Semiconductor Technology**

The B.Tech in Computer Science and Engineering (CSE) with a specialization in Semiconductor Technology is an interdisciplinary programme designed to provide students with an in-depth understanding of both computer science fundamentals and the cutting-edge developments in semiconductor technology. The programme bridges the gap between hardware and software, preparing graduates for roles in the rapidly growing semiconductor industry. The programme covers the design, fabrication, packaging and testing of semiconductor devices.

v. Bachelor of Computer Applications (Honours) with specializations

A Bachelor of Computer Applications is a three-year undergraduate degree Programme for candidates wishing to delve into the world of Computer languages. This course has one year research-based extension option to get the BCA with honours degree. This field provides students ample opportunities to make their career not only in private sector but also in the public sector. The curriculum includes significant flexibility so that students can deepen a more professionally focused degree with the expertise in the areas of information technology. The mission is to develop competent professionals with analytical skills and independent thinking for productive career in industry, academia and administration.

• BCA Specialization in Web Development

Bachelor in computer applications (BCA) with specialization in Web Application Development is a remarkable course in this fast-growing technology sector that offers dual career options for students in Web and Mobile Applications. This specialized course at The NorthCap University accord an in-depth theoretical as well as practical command of all the latest technology trends in the Mobile and Web Applications and their testing. At the forefront of BCA in Web Application Development, the course presents students the foundational expertise of all aspects of Web and Mobile Technology with prominence on development of applications for Android, iOS, and Web, keeping industry requirements in mind. During the study, you will understand the concepts associated with Web and Mobile technology, its architecture, and API to develop user-friendly apps. As one of the best Computer Science Engineering Colleges in Delhi NCR, our students will be imparted the requisite knowledge not only about fundamental concepts but also regarding design and controls strategy, tools, and techniques to store as well as secure data, and application security in web technology.

• BCA Specialization in Mobile Applications

Bachelor in computer applications (BCA) with specialization in Mobile Applications curriculum emphasizes the technical and practical aspects of the computer applications. BCA Course is an undergraduate programme where students are exposed to various areas of computer applications including the latest developments in the industry. In addition to all the mandatory subjects of a traditional BCA, this specialized course offers in-depth practical know-how of the current trends. Mobile Application sectors have the potential to grow exponentially, and they provide challenging job opportunities for young professionals with the right skill sets. On the Mobile Applications front, the course will provide students with the fundamental knowledge of all aspects of mobile technologies with emphasis on application development for Android and iOS, with industry requirements in mind.

Students will learn about fundamentals of C programming, Linux programming and computer organization, comprehensive knowledge in computer networks, android, iOS and mobile security, Java programming and RDBMS, exposure to new concepts through projects from the industry.

• BCA Specialization in Animations and Gaming

Bachelor in computer applications (BCA) in Gaming and Animation is a specialized course at The NorthCap University, and we're proud to be one of the top Computer Science Engineering Colleges in Delhi NCR designed as per the industry needs in consultation with industry experts to master basic game development. The course offers students to understand game design and apply the concepts for game development and coding. During the study, students will develop 2D Platformer games on the Unity 3D game engine which will add value to their professional portfolio along with the theoretical and conceptual exposure to the documentation. In animation, students will learn through exploration of the animation production pipeline (CG modeling, texturing, lighting, rigging, animation, and rendering) techniques and opportunities to enhance their employability and professional skills through project-based assessment.

Department of Computer Science and Engineering

Master of Technology in Computer Science & Engineering with Specialization in

- Cyber Security & Forensics
- Data Science

Programme Core		L-T-P	C
CSL501	Mathematical Foundations of Computer Science	3-0-0	3
CSL502	Advanced Algorithms	3-0-2	4
CSL515	Soft Computing	3-0-2	4
CSL535	Advanced Data Structure	3-0-2	4
Basic Science Courses		L-T-P	C
MAL616	Research Methodology	2-1-0	3
Open Elective Courses		L-T-P	C
	Open Elective - 1	2-0-2	3

*Open electives can be chosen from University list of Open Elective courses

Project & Dissertations		L-T-P	C
CSC501	Seminar	0-0-4	2
CSD501	Minor Project	0-0-8	4
CSD601	Dissertation (Phase-1)	0-0-12	6
CSD602	Dissertation (Phase-2)	0-0-24	12

Community Service		L-T-P	C
CSS501	Community Service - I	--	Audit
CSS502	Community Service - II	--	2
CSS601	Community Service - III	--	Audit
CSS602	Community Service - IV	--	2

Programme Electives (CyberSecurity and Forensics)		L-T-P	C
CSL537	Risk Management Principles and Policies	2-0-4	4
CSL544	Cyber Forensics & Malware Analysis Fundamentals	2-0-4	4
CSL546	Cloud and its Security	2-0-4	4
CSL547	Applied Cryptography	2-0-4	4
CSL548	Network Hacking & Security	2-0-4	4
CSL549	Secure coding vulnerabilities and mitigation	2-0-4	4
CSL565	Web Application Security	2-0-4	4
CSL566	Blockchain and Cryptocurrency	2-0-4	4
CSL567	Vulnerability Assessment and Penetration testing	2-0-4	4

Programme Electives (Data Science)		L-T-P	C
CSL530	Statistics with Python	2-0-4	4
CSL545	Big Data Analytics	2-0-4	4
CSL551	Foundation of Data Science	2-0-4	4
CSL555	Advanced Machine Learning	2-0-4	4
CSL556	Data Engineering	2-0-4	4
CSL558	Computer Vision	2-0-4	4
CSL559	Neural Networks and Deep Learning	2-0-4	4
CSL561	Business Analytics	2-0-4	4

M.Tech. Computer Science and Engineering (2024 - 2025)
(Specialization offered in Cyber Security & Forensics and Data Science)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CSL501 Mathematical Foundations of Computer Science 3-0-0 (3)	CSL535 Advanced Data Structure 3-0-2 (4)	PE-1 2-0-4 (4)	PE-2 2-0-4 (4)	CSC501 Seminar 0-0-4 (2)	CSS501 Community Service (CS) - I	10	0	14	24	17
II	CSL502 Advanced Algorithms 3-0-2 (4)	CSL515 Soft Computing 3-0-2 (4)	PE-3 2-0-4 (4)	PE-4 2-0-4 (4)	CSD501 Minor Project (5)	CSS502 Community Service (CS) - II (140Hrs** 2 Credits)	10	0	22	12	23
III	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)	PE-5 2-0-4 (4)	CSD601 Dissertation-I 0-0-12 (6)	--	CSS601 Community Service (CS) - III	6	1	18	6	16
IV	CSD602 Dissertation -II 0-0-24 (12)	--	--	--	--	CSS602 Community Service (CS) - IV (140Hrs 2 Credits)	0	0	24	--	24
Total Credits of the M.tech Degree Programme =											70

*PE – Programme Elective * OE – Open Elective

**Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

PG Diploma (2024 - 2025)
(Specialization offered in Cyber Security & Forensics and Data Science)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CSL501 Mathematical Foundations of Computer Science 3-0-0 (3)	CSL535 Advanced Data Structure 3-0-2 (4)	PE-1 2-0-4 (4)	PE-2 2-0-4 (4)	CSC501 Seminar 0-0-4 (2)	CSS501 Community Service (CS) -I	10	0	14	24	17
II	CSL502 Advanced Algorithms 3-0-2 (4)	CSL515 Soft Computing 3-0-2 (4)	PE-3 2-0-4 (4)	PE-4 2-0-4 (4)	CSD501 Minor Project (5)	CSS502 Community Service (CS) (140Hrs** 2 Credits)	10	0	22	12	23
Summer	Skill based course (5)	Industrial Internship (7)	--	--	--	--	0	0	0	10	10
Exit Option: Pg Diploma; Credits = 50											50

*PE – Programme Elective * OE – Open Elective

**Students can utilize the summer/winter break period to complete the remaining 140
Community Service hours every year

M.Tech. Computer Science and Engineering (Part Time) (2024 - 2025)
(Specialization offered in Cyber Security & Forensics and Data Science)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	L	T	P	Weekly Contact Hours	Credits
I	CSL501 Mathematical Foundations of Computer Science 3-0-0 (3)	CSL535 Advanced Data Structure 3-0-2 (4)	PE-1 2-0-4 (4)	CSC501 Seminar 0-0-4 (2)	8	0	10	14	13
II	CSL502 Advanced Algorithms 3-0-2 (4)	CSL515 Soft Computing 3-0-2 (4)	PE-2 2-0-4 (4)	CSS502 Community Service (CS) (140Hrs 2 Credits)	8	0	8	16	14
III	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)	PE-3 2-0-4 (4)	GSS601 Community Service (CS)	6	1	6	7	10
IV	PE-4 2-0-4 (4)	PE-5 2-0-4 (4)	CSD501 Minor Project (5)	CSS602 Community Service (CS) (140Hrs 2 Credits)	4	0	8	12	15
V	CSD601 Dissertation-I 0-0-12 (6)				0	0	12		6
VI	CSD602 Dissertation-II 0-0-24 (12)				0	0	24		12
Total Credits of the M.Tech Degree Programme =									70

*PE – Programme Elective * OE – Open Elective

**Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

Department of Computer Science and Engineering
Master of Computer Applications (2024 - 2025)

The overall credits structure of MCA

Category		Credits	
Programme Core (PC) + Compulsory Courses (9x4) + (3x3)		45	
Electives	Programme Electives (PE)-3 (4x3)	12	18
	Open Electives (OE) - 2 (2x 3)	6	
Ability Enhancement Courses (AEC)-4 (4CS) Skill Development Course (2) Value Added Course (NC)		6	
Industry Internship + Project + Seminar 2 (Internship)+ 12 (Major) + 2 (Seminar)		18	
TOTAL		87	

Programme Core and Compulsory Courses		L-T-P	C	Value Added and Skill based Courses		L-T-P	C
BSL516	Entrepreneurship and Innovation	2-0-2	3	MCV501	Skill Based Course	1-0-2	2
CLL513	Professional Communication	2-1-0	3	MCV502	Value Added Course	--	Audit
MAL616	Research Methodology	2-1-0	3	Ability Enhancement Courses		L-T-P	C
MCL501	Database Management System	3-0-2	4	MCS501	Community Service - I	--	Audit
MCL502	Business Analytics	3-0-2	4	MCS502	Community Service - II	--	2
MCL503	Data Communication and Networking	3-0-2	4	MCS601	Community Service - III	--	Audit
MCL504	Operating System	3-0-2	4	MCS602	Community Service - IV	--	2
MCL505	Foundations of Computer System	3-0-2	4	Open Elective Courses		L-T-P	C
MCL507	Data Structure and Algorithm Analysis	3-0-2	4	Open Elective - 1 (MOOC)*		3-0-0	3
MCL601	Software Project Management	3-0-2	4	Open Elective - 2 (MOOC)*		3-0-0	3
MCL602	Machine Learning	3-0-2	4	* Students can opt the equivalent MOOC course suggested by the department			
MCL603	Computer Organization and Architecture	3-0-2	4	Programme Electives - 1		L-T-P	C
Projects, Internship and Dissertation		L-T-P	C	MCL511	Object Oriented Programming	3-0-2	4
MCD601	Dissertation - I	0-0-8	4	MCL512	Web Technologies	3-0-2	4
MCD602	Dissertation - I	0-0-16	8	MCL513	Cloud Computing	3-0-2	4
MCP120	Seminar	0-0-4	2	MCL514	Computer Graphics and Multimedia	3-0-2	4
MCT201	Summer Internship/Industry Project	--	4	MCL515	Internet of Things	3-0-2	4
				MCL516	Network Security	3-0-2	4

Programme Electives - 2		L-T-P	C
MCL517	Cyber Security	3-0-2	4
MCL518	Soft Computing	3-0-2	4
MCL519	Advanced Computer Architecture	3-0-2	4
MCL520	Social Network Analysis	3-0-2	4
MCL521	Game Theory	3-0-2	4
MCL522	Theory of Computation	3-0-2	4

Programme Electives - 3		L-T-P	C
MCL611	Mobile Computing	3-0-2	4
MCL612	Big Data Analytics	3-0-2	4
MCL613	Block Chain Technology	3-0-2	4
MCL614	Artificial Intelligence and Expert Systems	3-0-2	4
MCL615	Digital Image Processing	3-0-2	4
MCL616	Natural Language Processing	3-0-2	4
MCL617	Advanced DBMS	3-0-2	4
MCL618	Python Programming	3-0-2	4
MCL619	Optimization techniques	3-0-2	4
MCL620	Big Data and NoSQL	3-0-2	4
MCL621	Compiler Design	3-0-2	4

Master of Computer Applications (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits								Community Service			Hrs. Per week			Credits
	Semester	Semester Course Code, Course Name (L-T-P) Credits								Community Service	L	T	P	Credits	
		Semester Course Code, Course Name (L-T-P) Credits													
1	MCL501 Database Management System 3-0-2 (4)	MCL503 Data Communication and Networking 3-0-2 (4)	MCL505 Foundations of Computer System 3-0-2 (4)	MCL507 Data Structure and Algorithm Analysis 3-0-2 (4)	CLL513 Professional Communication 2-1-0 (3)	MAL616 Research Methodology 2-1-0 (3)	MCV501 Skill Based Course 1-0-2 (2)	MCS501 Community Service - I (CS) 24	17	2	10	24			
2	MCPI20 Seminar 0-0-4 (2)	MCL502 Business Analytics 3-0-2 (4)	MCL504 Operating System 3-0-2 (4)	Programme Elective - 1 3-0-2 (4)	Programme Elective - 2 3-0-2 (4)	MCV502 Value Added Course (Audit)	MCS502 Community Service - II (CS) (140Hrs* 2 Credits)	18+2	12	0	12	18+2			
Summer	MCT201 Summer Internship/Industry Project											4			
Exit Option (PG Diploma)															
3	MCL601 Software Project Management 3-0-2 (4)	MCL603 Computer Organization and Architecture 3-0-2 (4)	Programme Elective - 3 3-0-2 (4)	BSL516 Entrepreneurship and Innovation 2-0-2 (3) \$	Open Elective - 1 (MOOC) 3-0-0 (3)	MCD601 Dissertation - I 0-0-8 (4)	MCS601 Community Service - III (CS)	22	14	0	16	22			
4	MCD602 Dissertation - II 0-0-16 (8)	MCL602 Machine Learning 3-0-2 (4)	Open Elective - 2 (MOOC) 3-0-0 (3)				MCS602 Community Service - IV (CS) (140Hrs 2 Credits)	15+2	6	0	18	15+2			
TOTAL									48	2	54	83+4			

* Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year.

**Any course can be given as MOOC with an hour as face to face and conducting minor and major exams.

\$ Entrepreneurship course will be offered in collaboration with STPI

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Full Stack Development

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
CSL253	Web Frameworks	2-0-4	4
CSL273	Enterprise Web Applications	2-0-4	4
CSL274	Middleware Frameworks and ORM	2-0-4	4
CSL276	NoSQL	2-0-4	4
CSL371	Mobile Application Development	2-0-4	4
CSL373	DevOps	2-0-4	4
CSL374	Microservice Based Application	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Cyber Security & Forensics

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I		0
CSS102	CS-II		2
CSS201	CS-III		0
CSS202	CS-IV		2
CSS301	CS-V		0
CSS302	CS-VI		2
CSS401	CS-VII		0
CSS402	CS-VIII		2
Programme/Specialization Electives			
CSL281	Secure Communication and Cryptography	2-0-4	4
CSL284	Digital Forensics and Malware Analysis	2-0-4	4
CSL382	Blockchain	2-0-4	4
CSL383	Network Security	2-0-4	4
CSL384	Cloud Security Essentials	2-0-4	4
CSL385	Risk Analysis & Assessment	2-0-4	4
CSL387	Web and Mobile Security	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Blockchain

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I		0
CSS102	CS-II		2
CSS201	CS-III		0
CSS202	CS-IV		2
CSS301	CS-V		0
CSS302	CS-VI		2
CSS401	CS-VII		0
CSS402	CS-VIII		2
Programme/Specialization Electives			
CSL239	Mathematics of Modern Cryptography	2-0-4	4
CSL247	Introduction to blockchain technologies	2-0-4	4
CSL355	Bitcoin and Cryptocurrency Technologies Smart Contracts	2-0-4	4
CSL356	Smart Contracts	2-0-4	4
CSL357	Blockchain for Cyber Security	2-0-4	4
CSL358	Blockchain Technology in Web Development	2-0-4	4
CSL449	Security and Privacy for Big Data Analytics	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering
Bachelor of Technology in Computer Science & Engineering with Specialization in Cloud Computing

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
CSL225	Programming for Data Science	2-0-4	4
CSL337	Cloud Architecture	2-0-4	4
CSL338	Virtualization & Cloud Computing	2-0-4	4
CSL339	Big Data on Cloud	2-0-4	4
CSL346	Artificial Intelligence & Machine Learning on Cloud	2-0-4	4
CSL445	Cloud Application Development & Deployment	2-0-4	4
CSL446	Cloud Security	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Artificial Intelligence and Machine Learning

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
CSL225	Programming for Data Science and AI	2-0-4	4
CSL312	Deep Learning	2-0-4	4
CSL347	Applied Artificial Intelligence and Expert Systems	2-0-4	4
CSL348	Reinforcement Learning	2-0-4	4
CSL349	Artificial Intelligence for Robotics	2-0-4	4
CSL447	Computer Vision	2-0-4	4
CSL448	Computational Linguistics and Natural Language Processing	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering
Bachelor of Technology in Computer Science & Engineering with Specialization in Data Science

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Community Service			
CSS101	CS-I		0
CSS102	CS-II		2
CSS201	CS-III		0
CSS202	CS-IV		2
CSS301	CS-V		0
CSS302	CS-VI		2
CSS401	CS-VII		0
CSS402	CS-VIII		2
Programme/Specialization Electives			
CSL225	Programming for Data Science	2-0-4	4
CSL227	Applied Computational Statistics	2-0-4	4
CSL232	Business Intelligence & Data Visualization	2-0-4	4
CSL311	Big Data	2-0-4	4
CSL312	Deep Learning	2-0-4	4
CSL313	Machine Learning	2-0-4	4
CSL316	Introduction to Image Processing and Recognition	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Gaming, AR & VR

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL242	AI for Games	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
CSL243	Game Design and Asset Creation	2-0-4	4
CSL244	Advanced Programming for Games	2-0-4	4
CSL245	Programming for Games	2-0-4	4
CSL246	Cross Platform Game Development	2-0-4	4
CSL341	AR Development	2-0-4	4
CSL343	Designing Human Computer Interfaces	2-0-4	4
CSL345	VR Development	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Internet of Things and 5G

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSL106N	FOCP I	2-1-4	5
CSL108N	FOCP II	2-1-4	5
CSL110	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL236	Introduction to AI & ML	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency			Credit
CSR118	General Proficiency-I		1
CSR119	General Proficiency -II		1
CSR218	General Proficiency -III		1
CSR219	General Proficiency -IV		1
CSR318	General Proficiency -V		1
CSR319	General Proficiency -VI		1
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
CSL238	Introduction to Cloud Computing	2-0-4	4
ECL252	Micro Controllers & Sensors	2-0-4	4
ECL316	Wireless & Mobile Communication	2-0-4	4
ECL256	Embedded Systems	2-0-4	4
ECL352	Design for IOT	2-0-4	4
ECL368	Security in IoT	2-0-4	4
ECL367	Introduction to 5G Technologies	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Department of Computer Science and Engineering

Bachelor of Technology in Computer Science & Engineering with Specialization in Semiconductor Technology

Code	Programme Core	L-T-P	C
Basic Science Courses			
CHL150	Engineering Chemistry	2-0-2	3
MAL151	Engineering Mathematics - I	3-0-2	4
MAL152	Engineering Mathematics - II	3-0-2	4
PYL150	Engineering Physics	3-0-2	4
MAL253	Engineering Mathematics - III	3-0-0	3
Engineering Science Courses			
CSLI06N	FOCP I	2-1-4	5
CSLI08N	FOCP II	2-1-4	5
CSLI10	Problem Solving and design thinking	2-0-2	3
ECL 110	Basics of Electrical & Electronics Engineering	2-0-2	3
MEL160	Basics of Mechanical Engineering	2-0-2	3
MEP110	Engineering Graphics & Drawing	1-0-4	3
Programme Core			
CSL209	Data Structures	3-0-2	4
CSL214N	Database Management Systems	3-1-2	5
CSL215	Introduction to JAVA	2-0-4	4
CSL229	Software Engineering and Project Management	3-0-2	4
CSL230	Analysis and Design of Algorithms	3-0-2	4
CSL242	AI for Games	3-0-2	4
CSL238	Introduction to cloud computing	2-0-4	4
CSL240	Computer Networks	3-0-2	4
CSL303	Operating System	3-0-2	4
CSL315	Advanced JAVA	3-0-2	4
CSL422	Cyber Security	3-0-2	4
ECL255	Digital Electronics and Computer Architecture	3-0-2	4
General Proficiency		Credit	
CSR118	General Proficiency-I	1	
CSR119	General Proficiency -II	1	
CSR218	General Proficiency -III	1	
CSR219	General Proficiency -IV	1	
CSR318	General Proficiency -V	1	
CSR319	General Proficiency -VI	1	
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2

Community Service		Credit	
CSS101	CS-I	0	
CSS102	CS-II	2	
CSS201	CS-III	0	
CSS202	CS-IV	2	
CSS301	CS-V	0	
CSS302	CS-VI	2	
CSS401	CS-VII	0	
CSS402	CS-VIII	2	
Programme/Specialization Electives			
ECL281	VLSI Design	2-0-4	4
ECL282	Digital System Design	2-0-4	4
ECL381	VLSI Verification and Testing	2-0-4	4
ECL382	Introduction to Micro fabrication	2-0-4	4
ECL483	Semiconductor Equipment Design and Technology	2-0-4	4
ECL485	Semiconductor Materials Synthesis and Characterization	2-0-4	4
ECL482	Semiconductor Packaging and Testin	2-0-4	4
Humanities and Management Courses			
CLL130	Effective Communications I	1-0-2	2
CLL140	Effective Communications II	1-0-2	2
SML300	Entrepreneurship	3-0-0	3
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Open Elective - 4	3-0-0	3
	Open Elective - 5	3-0-0	3
	Foreign Language Elective	3-0-0	3
	Liberal Arts Course	3-0-0	3
Project & Internship (P)			
CSC301	Seminar		1
CSD401	Project - I		4
CSD402	Project - II/ Internship		6
CST201	Industrial Internship		2
CST301	Industrial Internship		4
CSV101	Skill Development	0-0-2	1

Upto 20% of courses can be done through MOOC courses subject to department approval

Open electives, Foreign Elective and Liberal Art Courses can be chosen from University list of Open Elective courses

Minimum six programme electives for certification in specialization.

Bachelor of Technology in 'Computer Science and Engineering (2024 - 2025)

Sem	Semester Course Code, Course Name (L-T-P)Credits										GP	Community Services	Hrs. Per week			Credits
	CSLI06N FOCP-I (2-1-4)5	CHLI50 Engg Chemistry (2-0-2)3	MEPI10 Engineering Graphics & Drawing (1-0-4)3	CSLI10 Problem Solving and Design Thinking (2-0-2)3	CSRI18 GP-I 1 Credit	CSS101 CS-I	L	T	P							
1	MAL151 Engg Maths-I (3-0-2)4	PYLI50 Engineering Physics (3-0-2)4	MELI60 Basic of Mechanical Engineering (2-0-2)3	ECLI10 Basic of Electrical & Electronics Engineering (2-0-2)3	CSRI19 GP-I Credit	CSS102 CS-II (140 Hrs)** 2 Credits	10	1	14	18+1 =19						
2	MAL152 Engg Maths-II (3-0-2)4	MAL253 Engg. Maths III (3-0-0)3	CSLI215 Intro To Java (2-0-4)4	CLLI140 Effective Communication-I (1-0-2)2	CSRI218 GP-I Credit	CSS201 CS-III	13	1	14	21+3 =24						
3	CSLI214N DBMS (3-1-2)5	CSLI209 Data Structures (3-0-2)4	CSLI215 Intro To Java (2-0-4)4	CLLI140 Effective Communication-II (1-0-2)	CSRI218 GP-I Credit	CSS201 CS-III	15	1	12	22+1 =23						
4	CSLI222 Cyber Security (3-0-2)4	CSLI209 Data Structures (3-0-2)4	CSLI215 Intro To Java (2-0-4)4	CLLI140 Effective Communication-II (1-0-2)	CSRI219 GP-I Credit	CSS202 CS-IV (140 Hrs)** 2 Credits	16	0	10	21+3 =24						
Summer	CST201 Industrial Training/internship														02	
5	CSLI236 Introduction to AI & ML / CSLI242 AI for Games (3-0-2)4	CSLI303 Operating System (3-0-2)4	CSLI315 Adv Java (3-0-2)4	CSLI240 Computer Networks (3-0-2)4	CSRI318 GP-I Credit	CSS301 CS-V	17	0	12	24+1 =25						
6	CSLI229 SEPM (3-0-2)4	CSLI230 Analysis and Design of Algorithms (3-0-2) 4	CSLI238 Introduction to Cloud Computing (3-0-2)4	Programme Elective-5 (2-0-4) 4	CSRI319 GP-I Credit	CSS302 CS-VI (140 Hrs)** 2 Credits	16	0	14	23+3 =26						
Summer	CST301 Industrial Training/ internship														04	
7	Programme Elective-6 (2-0-4)4	Programme Elective-7 (2-0-4)4	Open Elective - 4 (MOOC) (3-0-0)3	CHLI100 Environmental Studies (3-0-0)3		CSS401 CS-VII	13	0	8	21						
8	Liberal Arts Elective (3-0-0)3 (MOOC)	Open Elective - 5 (MOOC) (3-0-0)3	Open Elective - 4 (MOOC) (3-0-0)3			CSS402 CS-VIII (140 Hrs) 2 Credits	6	0	0	12+2 =14						
	Total												106	3	84	162+6+14 =182

** Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year. The University shall conduct introductory sessions in the 1st semester on soft skills, which are a set of transferable skills and key personal traits essential for personality development. The University shall conduct special sessions in the 4th semester to reinforce the learnings of introductory training sessions conducted in the first year. Two value-added courses over and above the programme scheme shall be offered during the 5th & 6th semesters to impart special skills to students for enhancing their employability. Advanced sessions on soft skills shall be conducted in the 7th semester to hone up the preparedness of students for placements and make them industry ready for national and international jobs.

Programme Electives for each track (2024 - 2025)

Tracks	Tracks	Data Science	Cloud Computing	Full Stack	Game Tech	Cyber Security	Blockchain	AI & ML	IoT & 5G	Other Electives	Semiconductor Technology
Programme Elective-1	PE 1	CSL 225 Programming for Data Science	CSL225 Programming for Data Science	CSL273 Enterprise Web Applications	CSL243 Game Design & Asset Creation	CSL 281 Secure Communication and Cryptography	CSL239 Mathematics of Modern Cryptography	CSL 225 Programming for Data Science and AI	ECL252 Micro Controllers & Sensors	MAL270 Numerical Methods	ECL281 VLSI Design
Programme Elective-2	PE 2	CSL227 Applied Computational Statistics	CSL337 Cloud Architecture	CSL274 Middleware Frameworks and ORM	CSL245 Programming for Games	CSL 284 Digital Forensics and Malware Analysis	CSL247 Intro. to blockchain technologies	CSL347 Applied Artificial Intelligence and Expert Systems	ECL256 Embedded Systems	CSL223 Web Development Technologies	ECL282 Digital System Design
Programme Elective-3	PE 3	CSL232 Business Intelligence and Data Visualization	CSL338 Virtualization & Cloud Computing	CSL276 No SQL Databases	CSL244 Advanced Programming for Games	CSL 383 Network security	CSL355 Bitcoin and Cryptocurrency Technologies	CSL348 Reinforcement Learning	ECL316 Wireless & Mobile Communication	MAL280 Linear Algebra and its Applications	ECL381 VLSI Verification and Testing
Programme Elective-4	PE 4	CSL313 Machine Learning	CSL339 Big Data on Cloud	CSL253 Web Frameworks	CSL343 Designing Human Computer Interfaces	CSL387 Web and Mobile Security	CSL356 Smart Contracts	CSL349 Artificial Intelligence for Robotics	ECL352 Design for IOT 1	MAL260 Probability and Statistics	ECL382 Introduction to Micro fabrication
Programme Elective-5	PE 5	CSL311 Big Data	CSL346 Artificial Intelligence & Machine Learning on Cloud	CSL371 Mobile Application Development	CSL246 Cross Platform Game Development	CSL385 Risk Analysis and Assessment	CSL357 Blockchain for Cyber Security	CSL312 Deep Learning	ECL353 Design to IOT 2	CSL 318 Theory of Computation	ECL483 Semiconductor Equipment Design and Technology
Programme Elective-6	PE 6	CSL316 Introduction to Image Processing and Recognition	CSL445 Cloud Application Development & Deployment	CSL373 DevOps	CSL341 AR Development	CSL384 Cloud Security Essentials	CSL358 Blockchain Technology in Web Development	CSL447 Computer Vision	ECL367 Introduction to 5G Technologies		ECL485 Semiconductor Materials Synthesis and Characterization
Programme Elective-7	PE 7	CSL312 Deep Learning	CSL445 Cloud Security	CSL374 Micro service Based Applications	CSL345 VR Development	CSL382 Blockchain	CSL449 Security and Privacy for Big Data Analytics	CSL448 Computational Linguistics and Natural Language Processing	ECL368 Security in IoT		ECL482 Semiconductor Packaging and Testin

Department of Computer Science and Engineering

Bachelor of Computer Applications with Specialization in Web Application Development (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core (PC)			
BCL103	Programming Fundamentals - I	2-0-4	4
BCL105	Programming Fundamentals - II	2-0-4	4
BCL110	Problem Solving and Design thinking	2-0-2	3
BCL201	Data Structures	3-0-2	4
BCL202	Computer Networks	3-0-2	4
BCL203	DBMS	3-0-2	4
BCL204	Operating Systems	3-0-2	4
BCL205	Digital Electronics & Computer Architecture	3-0-2	4
BCL206	Analysis and Design of Algorithms	3-0-2	4
BCL303	Introduction to AI and ML	3-0-2	4
BCL305	Software Engineering	3-0-2	4
BSL101	Entrepreneurship	2-0-2	3
BSL102	Principles of Management	2-0-2	3
CLL130	Effective Communication - II	2-1-0	2.5
CLL140	Effective Communication - I	2-1-0	2.5
CLL513	Professional Communication	2-1-0	3
MAL153	Mathematics -I	3-1-0	4
MAL112	Basics of Statistics	3-1-0	4
MAL616	Research Methodology	2-1-0	3
MCL502	Business Analytics	3-0-2	4
MCL503	Data Communication and Networking	3-0-2	4
PCL102	Phycology for living	2-0-4	4
General Proficiency			
BCR118	General Proficiency-I	1	
BCR119	General Proficiency -II	1	
BCR218	General Proficiency -III	1	
BCR219	General Proficiency -IV	1	
BCR318	General Proficiency -V	1	
BCR319	General Proficiency -VI	1	
Ability Enhancement Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Ethics	2-0-0	2
BCS101	Community Service I	--	Audit
BCS102	Community Service II	--	2
BCS201	Community Service III	--	Audit
BCS202	Community Service IV	--	2
BCS301	Community Service V	--	Audit
BCS302	Community Service VI	--	2
MCS501	Community Service I	--	Audit
MCS502	Community Service I	--	2

Value Added Course			
BCV101	Skill Deveopement-1	1-0-2	2
BCV301	Skill Development-2	1-0-2	2
MCV501	Skill Based Course	1-0-2	2
MCV502	Value Added Course	--	Audit
Programme/Specialization Electives (PE-1 to PE-4)			
BCL221	UI / UX Design principles	2-0-4	4
BCL222	Fundamentals of Web application development	2-0-4	4
BCL321	Fundamentals of Mobile application development	2-0-4	4
BCL322	Software prototyping, usability & testing	2-0-4	4
Programme/Specialization Elective(PE-5)			
MCL511	Object Oriented Programming	2-0-4	4
MCL512	Web Technologies	2-0-4	4
MCL513	Cloud Computing	2-0-4	4
MCL514	Computer Graphics and Multimedia	2-0-4	4
MCL515	Internet of Things	2-0-4	4
MCL516	Network Security	2-0-4	4
Programme/Specialization Elective (PE-6)			
MCL517	Cyber Security	2-0-4	4
MCL518	Soft Computing	2-0-4	4
MCL519	Advanced Computer Architecture	2-0-4	4
MCL520	Social Network Analysis	2-0-4	4
MCL521	Game Theory	2-0-4	4
MCL522	Theory of Computation	2-0-4	4
Project and Internship			
BCD301	Project - 1	0-0-8	4
BCD302	Project - 2	0-0-12	6
MCD603	Dissertation - I	0-0-16	8
MCD604	Dissertation - II	0-0-16	8
BCT201	Summer Internship - I	--	4
BCT301	Summer Internship - II	--	4
MCP120	Seminar	--	2
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Foreign Language Elective	1-2-0	3

* Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year.

Exit option 1: After completion of first year and 45 credits, student will get the BCA UG certificate

Exit option 2: After completion of second year and 93 credits, student will get the BCA UG Diploma

Exit option 3: After completion of second year and 131 credits, student will get the BCA UG

For BCA degree with honours, students have to undergo the courses of MCA first year. In place of three courses - (MCS501 MCL504, MCL505 and MCL507) student can opt for research work. Equivalent credits can be transferred on successful completion of the research work.

The University shall conduct introductory sessions in the 1st semester on soft skills, which are a set of transferable skills and key personal traits essential for personality development.

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Two value-added courses over and above the programme scheme shall be offered during the 5th and 6th semesters to impart special skills to students for enhancing their employability.

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Department of Computer Science and Engineering

Bachelor of Computer Applications with Specialization in Mobile Applications (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core (PC)			
BCL103	Programming Fundamentals - I	2-0-4	4
BCL105	Programming Fundamentals - II	2-0-4	4
BCL110	Problem Solving and Design thinking	2-0-2	3
BCL201	Data Structures	3-0-2	4
BCL202	Computer Networks	3-0-2	4
BCL203	DBMS	3-0-2	4
BCL204	Operating Systems	3-0-2	4
BCL205	Digital Electronics & Computer Architecture	3-0-2	4
BCL206	Analysis and Design of Algorithms	3-0-2	4
BCL303	Introduction to AI and ML	3-0-2	4
BCL305	Software Engineering	3-0-2	4
BSL101	Entrepreneurship	2-0-2	3
BSL102	Principles of Management	2-0-2	3
CLL130	Effective Communication - II	2-1-0	2.5
CLL140	Effective Communication - I	2-1-0	2.5
CLL513	Professional Communication	2-1-0	3
MAL153	Mathematics -I	3-1-0	4
MAL112	Basics of Statistics	3-1-0	4
MAL616	Research Methodology	2-1-0	3
MCL502	Business Analytics	3-0-2	4
MCL503	Data Communication and Networking	3-0-2	4
PCL102	Phycology for living	2-0-4	4
General Proficiency			
BCR118	General Proficiency-I	1	
BCR119	General Proficiency -II	1	
BCR218	General Proficiency -III	1	
BCR219	General Proficiency -IV	1	
BCR318	General Proficiency -V	1	
BCR319	General Proficiency -VI	1	
Ability Enhancement Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Ethics	2-0-0	2
BCS101	Community Service I	--	Audit
BCS102	Community Service II	--	2
BCS201	Community Service III	--	Audit
BCS202	Community Service IV	--	2
BCS301	Community Service V	--	Audit
BCS302	Community Service VI	--	2
MCS501	Community Service I	--	Audit
MCS502	Community Service I	--	2

Value Added Course			
BCV101	Skill Deveopement-1	1-0-2	2
BCV301	Skill Development-2	1-0-2	2
MCV501	Skill Based Course	1-0-2	2
MCV502	Value Added Course	--	Audit
Programme/Specialization Electives (PE-1 to PE-4)			
BCL213	Android and iOS Operating System	2-0-4	4
BCL214	Flutter for Mobile App Development	2-0-4	4
BCL313	Mobile Arch & app development	2-0-4	4
BCL315	Mobile Security	2-0-4	4
Programme/Specialization Elective(PE-5)			
MCL511	Object Oriented Programming	2-0-4	4
MCL512	Web Technologies	2-0-4	4
MCL513	Cloud Computing	2-0-4	4
MCL514	Computer Graphics and Multimedia	2-0-4	4
MCL515	Internet of Things	2-0-4	4
MCL516	Network Security	2-0-4	4
Programme/Specialization Elective (PE-6)			
MCL517	Cyber Security	2-0-4	4
MCL518	Soft Computing	2-0-4	4
MCL519	Advanced Computer Architecture	2-0-4	4
MCL520	Social Network Analysis	2-0-4	4
MCL521	Game Theory	2-0-4	4
MCL522	Theory of Computation	2-0-4	4
Project and Internship			
BCD301	Project - 1	0-0-8	4
BCD302	Project - 2	0-0-12	6
MCD603	Dissertation - I	0-0-16	8
MCD604	Dissertation - II	0-0-16	8
BCT201	Summer Internship - I	--	4
BCT301	Summer Internship - II	--	4
MCP120	Seminar	--	2
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Foreign Language Elective	1-2-0	3

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Department of Computer Science and Engineering

Bachelor of Computer Applications with Specialization in Animation and Gaming (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core (PC)			
BCL103	Programming Fundamentals - I	2-0-4	4
BCL105	Programming Fundamentals - II	2-0-4	4
BCL110	Problem Solving and Design thinking	2-0-2	3
BCL201	Data Structures	3-0-2	4
BCL202	Computer Networks	3-0-2	4
BCL203	DBMS	3-0-2	4
BCL204	Operating Systems	3-0-2	4
BCL205	Digital Electronics & Computer Architecture	3-0-2	4
BCL206	Analysis and Design of Algorithms	3-0-2	4
BCL303	Introduction to AI and ML	3-0-2	4
BCL305	Software Engineering	3-0-2	4
BSL101	Entrepreneurship	2-0-2	3
BSL102	Principles of Management	2-0-2	3
CLL130	Effective Communication - II	2-1-0	2.5
CLL140	Effective Communication - I	2-1-0	2.5
CLL513	Professional Communication	2-1-0	3
MAL153	Mathematics -I	3-1-0	4
MAL112	Basics of Statistics	3-1-0	4
MAL616	Research Methodology	2-1-0	3
MCL502	Business Analytics	3-0-2	4
MCL503	Data Communication and Networking	3-0-2	4
PCL102	Phycology for living	2-0-4	4
General Proficiency			
BCR118	General Proficiency-I		1
BCR119	General Proficiency -II		1
BCR218	General Proficiency -III		1
BCR219	General Proficiency -IV		1
BCR318	General Proficiency -V		1
BCR319	General Proficiency -VI		1
Ability Enhancement Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Ethics	2-0-0	2
BCS101	Community Service I	--	Audit
BCS102	Community Service II	--	2
BCS201	Community Service III	--	Audit
BCS202	Community Service IV	--	2
BCS301	Community Service V	--	Audit
BCS302	Community Service VI	--	2
MCS501	Community Service I	--	Audit
MCS502	Community Service I	--	2

Value Added Course			
BCV101	Skill Deveopement-1	1-0-2	2
BCV301	Skill Development-2	1-0-2	2
MCV501	Skill Based Course	1-0-2	2
MCV502	Value Added Course	--	Audit
Programme/Specialization Electives (PE-1 to PE-4)			
BCL211	Game Art Essentials	2-0-4	4
BCL222	Fundamentals of Web application development	2-0-4	4
BCL311	Basics of 3D Animation	2-0-4	4
BCL312	Foundations of 2D Game Development	2-0-4	4
Programme/Specialization Elective(PE-5)			
MCL511	Object Oriented Programming	2-0-4	4
MCL512	Web Technologies	2-0-4	4
MCL513	Cloud Computing	2-0-4	4
MCL514	Computer Graphics and Multimedia	2-0-4	4
MCL515	Internet of Things	2-0-4	4
MCL516	Network Security	2-0-4	4
Programme/Specialization Elective (PE-6)			
MCL517	Cyber Security	2-0-4	4
MCL518	Soft Computing	2-0-4	4
MCL519	Advanced Computer Architecture	2-0-4	4
MCL520	Social Network Analysis	2-0-4	4
MCL521	Game Theory	2-0-4	4
MCL522	Theory of Computation	2-0-4	4
Project and Internship			
BCD301	Project - 1	0-0-8	4
BCD302	Project - 2	0-0-12	6
MCD603	Dissertation - I	0-0-16	8
MCD604	Dissertation - II	0-0-16	8
BCT201	Summer Internship - I	--	4
BCT301	Summer Internship - II	--	4
MCP120	Seminar	--	2
Other Mandatory Courses			
	Open Elective - 1	3-0-0	3
	Open Elective - 2	3-0-0	3
	Open Elective - 3	3-0-0	3
	Foreign Language Elective	1-2-0	3

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Bachelor of Computer Applications (Honours) (2024 - 2025)

Sem.	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. / week			Credits
	Community Service											L	T	P	
1	MAL153 Mathematics-I (3-1-0) 4	BCL103 Programming Fundamentals -I (2-0-4) 4	BSL102 Principles of Management (2-0-2) 3	CLL120 Human Values & Professional Ethics (2-0-0-) 2	BCV101 Skill Development -I (1-0-2) 2	BCL110 Problem Solving and Design Thinking(2-0-2) 3	BCS101 CS-I 1 Credit	12	1	10	19				
2	MAL112 Basics of Statistics (3-1-0) 4	CHL100 Environmental Studies (3-0-0) 3	BCL104 Programming Fundamentals-II (2-0-4) 4	Foreign Language Elective 1 (1-2-0) 3	Open Elective - 1 (3-0-0) 3	CLL101 Effective Communication-I (1-0-2) 2	BCS102 CS-II (140Hrs)* 2 Credit	13	3	6	22				
BCT201 Summer Training - I															
Exit Option - 1 (UG Certificate)#															
3	BCL201 Data Structures (3-0-2) 4	BCL203 DBMS (3-0-2) 4	PCL102 Psychology for living (2-1-0) 3	BCL205 Digital Electronics & Computer Architecture (3-0-2) 4	Programme Elective-I (2-0-4-) 4	CLL102 Effective Communication-II (1-0-2) 2	BCS201 CS-III 1 Credit	14	1	12	22				
4	BCL202 Computer Networks (3-0-2) 4	BCL204 Operating System (3-0-2) 4	Open Elective - 2 (3-0-0) 3	Programme Elective-2 (2-0-4) 4	BCL206 Analysis and Design of Algorithms (3-0-2) 4	BCS202 CS-IV (140Hrs)* 2 Credit	14	0	10	22					
BCT301 Summer Training - II															
Exit Option - 2 (UG Diploma)#															
5	BSL101 Entrepreneurship (2-0-2) 3	BCL303 Introduction to AI & ML (3-0-2) 4	BCL305 Software Engineering (3-0-2-) 4	Programme Elective-3 (2-0-4-) 4	BCV301 Skill Development -2 (1-0-2) 2	BCD301 Project - 1 Semester at Industry/Startup Project (0-0-8) 4	BCS301 CS-V 1 Credit	11	0	20	22				
6	Programme Elective-4 (2-0-4) 4	Open Elective-3 (3-0-0) 3	BCD302 Project - 2 Semester at Industry/Startup Project (0-0-12) 6				BCS302 CS-VI (140Hrs) 2 Credit	5	0	16	16				
BCA Degree															
7	MCL503 Data Communication and Networking (3-0-2) 4	CLL513 Professional Communication (2-1-0) 3	MCL501 Skill Based Course (1-0-2) 2	MAL616 Research Methodology (2-1-0) 3	MCD603 Dissertation - I (0-0-16) 8		MCS501 Community Service - I (CS)	8	2	20	20				
8	MCP120 Seminar (0-0-4) 2	MCL502 Business Analytics (3-0-2) 4	Programme Elective - 5 (3-0-2) 4	Programme Elective - 6 (3-0-2) 4	MCV502 Value Added Course (Audit)	MCD604 Dissertation - II (0-0-16) 8	MCS502 Community Service -II (CS) (140Hrs)* 2 Credits	9	0	26	24				
Total											86	7	120	175	

CENTRE FOR MEDIA & ENTERTAINMENT

The media industry is gradually expanding into a billion-dollar industry. The need for trained, industry-ready professionals in the fields of music, films and video games has grown exponentially. India is riding the crest of this wave of media success and is seeing rapid expansion in many facets of the media industry. This has led to a need for fresh-faced specialists who are proficient, knowledgeable, creative, and can seamlessly transition from the classroom to the field.

Centre for Media & Entertainment hones our students' raw, natural talents and ensures that they are ready to make this big step up.

Programmes Offered:

1. B.Sc. Sound Engineering
2. B.Sc. Visual Communication
3. B.Sc. Visual Effects and Animation
4. BCA Game Development
5. BCA Media & Information Technology

i. B.Sc. Sound Engineering

B.Sc. Sound Engineering is a 3-year undergraduate programme spread across 6 semesters. The programme allows students to gain in-depth knowledge of Music Production, Live Sound, Film Sound and the media industry. The programme is designed to impart holistic, experiential, and globally relevant knowledge in Audio, Sound and Music Industry. Students will work on curated projects and be able to gain expertise in different aspects of Sound Engineering.

Market Trends of Sound Engineering:

- Empowering students to understand the various parts of the technical media discipline.
- Providing students with the competencies and skills needed to work as content creators in the media industry.
- Exposing students to the industry through various workshops conducted by industry professionals and experts
- Software taught: Ableton Live, Pro Tools, Logic, and SMAART.
- Focus on Soft skills like language and communication
- Project and output-oriented course structure
- Faculty of experienced professors and certified trainers

Unique Selling Points of the Programme:

- Project oriented programme
- Our programme is NEP enabled.
- Pro Tools Fundamentals 'PT101' & 'PT110' certifications included in course
- Learn from Avid, Ableton, SMAART and Dante certified trainers
- In-depth understanding of Fundamentals and Advanced concepts
- Hands-on training in Dolby ATMOS recording and mixing studios
- Well-equipped Media Production Lab
- Events like Music Production Week & Sound Conclave
- Regular industry workshops conducted
- Internship opportunities and placement support for students

ii. B.Sc. Visual Communication

B.Sc. Visual Communication is a 3-year undergraduate programme spread across 6 semesters. The programme allows students to gain in-depth knowledge of photography, video production, graphic design, and the media industry. The programme is designed to impart holistic, experiential, and globally relevant knowledge in Photography, Video Production, and Graphic Designing. Students will work on curated projects and be able to choose a specialization in Advertising Photography, Ad Film Making, or Graphic design to make them industry ready.

Market Trends of Visual Communication:

- Industry-relevant practical exposure to Photography, Video Production, Graphic Designing, and hands-on experience with various gears and software.
- Empowering students to understand the various parts of the technical media discipline.
- Providing students with the competencies and skills needed to work as content creators in the media industry.
- Exposing students to the industry through various workshops conducted by industry professionals and experts
- Software taught: Adobe Creative Suite (Lightroom, Photoshop, InDesign, Premiere Pro, After Effects), Audacity, CorelDraw.
- Focus on Soft skills like language and communication
- Project and output-oriented course structure
- Faculty of experienced professors and certified trainers

Highlights of the Programme:

- Industry-relevant practical exposure to Photography, Video Production, Graphic Designing, and hands-on experience with various gears and software.
- Empowering students to understand the various parts of the technical media discipline.
- Providing students with the competencies and skills needed to work as content creators in the media industry.
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- Software taught: Adobe Creative Suite (Lightroom, Photoshop, InDesign, Premiere Pro, After Effects, Audacity, and CorelDraw.
- Focus on Soft skills like language and communication
- Project and output-oriented course structure
- Faculty of experienced professors and certified trainers

iii. B.Sc. Visual Effects And Animation

The demand for Visual Effects & Animation has expanded with the increase in the emergence of the media sector, gearing up significantly in the sphere of the multimedia ecosystem.

The integration of new OTT services across the existing subscription-based streaming devices among the emerging economies is expected to drive the applications of the animation & VFX sector. The companies are continuously involved in introducing new services for animation and VFX dedicated to OTT content.

The introduction of AI, VR, and AR could boost the global 3D animation market. 3D animators employ artificial intelligence (AI) and natural language processing in conjunction with a cognitive modelling method to enhance and virtualize the animation process to control the simulation and user experience in 3D games.

Market Trends of Visual Effects and Animation:

- Courses that cover the fundamentals of VFX, such as 3D Modelling, Texturing, and Lighting, are essential for beginners in the industry. They will provide students with a solid foundation to build upon and enable them to create critical VFX scenes.

- Courses that cover advanced VFX techniques such as compositing, motion graphics, and special effects will enable students to create more complex scenes and make them stand out in the job market.
- Courses focusing on industry-specific software, such as Autodesk Maya, Adobe After Effects, and Nuke, will give students a competitive edge in the job market and increase their chances of being hired.
- Courses that cover the business and management aspects of the VFX industry, such as project management, budgeting, and marketing, will equip students with the skills needed to succeed in managerial roles.

Unique Selling Points of the Programme:

- The Visual Effects and Animation course covers fundamentals of drawing and advanced sketching techniques
- Practical application of the pre-production process in making animation and VFX films
- In-depth practical understanding of 3D production pipeline and VFX pipeline
- Creating a 3D environment according to VFX shot and camera handling for shoots
- Creating 3D assets and characters with photo-realistic textures and creating lighting according to VFX shots (to match the real setup)
- Industry workshops every month to help students understand what is currently happening in the industry
- Animation Day, VFX Jam, Annual Awards, etc., where students come together and create amazing output
- In-depth understanding of matte painting (background) for 3D and VFX shots
- Students will create short films (live action, 2D, 3D) and advertisements (live action, 2D, 3D) with various visual effects
- Opportunity to work with our in-house "Toolbox Studio"
- Working with film and sound students to create a holistic project and getting insights into sound and live-action films
- Sound knowledge of stereoscopy to create 3D videos, including depth
- Get hands-on experience with VFX and animation software and tools like: Adobe Photoshop, Adobe After Effects, Adobe Premiere Pro, Adobe Animate CC, Adobe Media Encoder, Autodesk Maya, The Foundry Nuke, Boris FX Silhouette, Houdini, Substance Painter, 3D Equalizer, ZBrush, and basic introduction of Unity Game Engine
- Pulling a green screen key and creating an intermediate background for VFX shots
- Creating effects like particles, fire, and water for VFX.

iv. BCA Game Development

With the industry growing by leaps and bounds, game developers are in big demand, and most gaming companies prefer to hire people with a degree in game development. If you're seeking specialized game development degree programmes. In that case, Our BCA course includes studying the ins and outs of game programming, creating games, and writing a sophisticated programme using industry-standard languages (C#, C++, HTML, etc.). We strongly emphasize logical thinking to foster intellectual development and problem-solving skills, which are crucial for game creation. Our holistic Game Development courses ensure that you are job-ready and a step ahead of the rest when you enter the game development arena. Add to that our tie-ups with companies in Pune, Bengaluru, and other major cities across India (Shoonya Game Technologies, Driya Interactive, Rolocule Games, Sattvarise Technologies, Reliance game, etc.)

Market Trends of Game Development:

- The game development industry is a rapidly growing industry and has a high demand for skilled professionals.
- The proposed courses for BCA in Game Development will provide students with the skills and knowledge required to pursue a range of job roles in the game development industry, including game programmers, game designers, game artists, game testers, and game marketers.
- The course will also prepare students to work on various platforms, including mobile, console, and PC.
- Graduates of this course can expect to have excellent placement opportunities in game development companies and other related industries.

Unique Selling Points of the Programme:

- The game development course structure is project and output-oriented
- Students learn by doing and get hands-on experience with game and programming languages used in real-life projects in our game development courses after 12th
- Programming tools covered include C, C++, C#, HTML, Java, Python, AR and VR technologies, and various game engines such Unity, Unreal, Construct
- Students learn to build multi-platform games and get end-user feedback via inter-class gaming competitions
- Providing students with the competencies and skill set needed to develop mobile applications and games for iOS and Android
- Events such as inter-class gaming competitions and board game expos are hosted to simulate end-user feedback for the students and further their knowledge and exposure
- Guidance is provided by gaming industry professional's experts and certified trainers
- The course prepares students for a successful game development career.

v. BCA Media & Information Technology

Media and Information Technology are rapidly evolving fields that offer an exciting array of career opportunities for tech-savvy individuals. With the increasing importance of digital media, the demand for skilled professionals who can develop and manage media content has grown exponentially. At our BCA in Media & Information Technology programme, we offer a comprehensive curriculum that prepares students for the diverse and fast-paced media industry. Our programme focuses on teaching students the fundamentals of software development, multimedia, animation, video production, web development, etc. using industry-standard languages such as Java, Python, and

HTML. Logical thinking and problem-solving skills are emphasized to ensure that students are well-equipped to tackle complex projects. Our comprehensive Media & Information Technology courses ensure that you are job-ready and well-prepared to enter the media industry. We have tie-ups with companies in major cities across India, such as Pune, Mumbai, and Bangalore, which offer excellent opportunities for internships and placements.

With the BCA in Media & Information Technology degree, you can explore a range of exciting career opportunities, such as Software developer, web developer, Database administrator, Network administrator and digital marketer etc. The media industry is growing rapidly, and the demand for skilled professionals is increasing day by day, making the BCA in Media & Information Technology programme an excellent choice for students who wish to make a career in the media industry.

Market Trends of Media & Information Technology:

- The Media & IT industry is a rapidly growing industry and has a high demand for skilled professionals.
- The proposed courses for BCA in Media & IT will provide students with the skills and knowledge required to pursue a range of job roles in the Gaming, VFX and software industry.
- The course will also prepare students to work in various media and IT fields, such as Software developer,

Technical director, Roto Paint, web developer, video editor, and more.

- Graduates of this course can expect to have excellent placement opportunities in Gaming, VFX and software industry.

Unique Selling Points of the Programme:

- The media and information technology course structure is project and output-oriented.
- Industry-relevant practical exposure to the Game, VFX, and IT industry and hands-on experience with various tools
- Empowering students with the ability to understand the insight into the various parts of the Technical discipline in Game and VFX
- Develop competencies necessary to work in both media (Game and VFX) and IT industries
- Students are taken to influential Media, Games, and animation events to further their knowledge and exposure.
- Collaborate with other students during “Game Day” and “Game Jam” events.

Centre for Media and Entertainment

B.Sc - Sound Engineering (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core			
MSL101	Media Communication Concepts	3-0-0	3
SEP101	Ear Training & Working With Instruments	2-0-2	3
SEL101	Physics and Electronics	4-0-0	4
SEP103	Live and Studio Equipment	2-0-4	4
MSL102	Media Technology	4-0-0	4
SEP102	Music Recording and Mixing Techniques	1-0-6	4
SEL104	Digital Audio Workstation	1-0-6	4
SEL102	Digital Audio & Networking Technology	3-0-0	3
MSL301	Media Laws and Ethics	3-0-0	3
SEP201	Digital Music Performance	1-0-4	3
SEP203	Electronic Music Production	1-0-6	4
MSL302	Research Techniques	4-0-0	4
SEP202	Acoustics and Studio Construction	2-0-2	3
SEP301	Surround Sound & ATMOS Technology	1-0-4	3
SEP303	Game Audio	1-0-4	3
SEL301	Music Business	2-0-0	2
SEP305	Live Sound	0-0-6	3
General Proficiency			
CSR118	General Proficiency-I	1	
CSR119	General Proficiency -II	1	
CSR218	General Proficiency -III	1	
CSR219	General Proficiency -IV	1	
CSR318	General Proficiency -V	1	
CSR319	General Proficiency -VI	1	
Community Service (CS)			
SES101	CS- I	0	
SES102	CS- II	2	
SES201	CS- III	0	
SES202	CS- IV	2	
SES301	CS- V	0	
SES302	CS- VI	2	

Programme/Specialization Electives			
Specialisation Elective - I			
SEP204	Film & Game Sound Design	1-0-4	3
SEP206	Production Audio Mixing	1-0-4	3
Specialisation Elective - II			
SEP208	Podcast Project	1-0-6	4
SEP212	Remix Project	1-0-6	4
Specialisation Elective - III			
SED302	Post Production Project	0-0-12	6
SED304	Music Production Project	0-0-12	6
Specialisation Elective - IV			
SED306	Studio Construction Project	0-0-12	6
SED308	Game Audio Project	0-0-12	6
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Other Mandatory Courses			
CLL130	Effective Comm-I	1-0-2	2
CLL140	Effective Comm-II	1-0-2	2
	Foreign Language Elective	1-2-0	3
	Open Elective-I	2-0-2	3
	Open Elective-II	2-0-2	3
	Open Elective-III	2-0-2	3
Project & Internship (P)			
SET302/ SET304	Internship / Case Study	0-0-12	6
SED201	Minor Project	0-0-8	4
SET301	Summer Internship	0-0-12	6

- Upto 20% of courses can be done through MOOC courses subject to department approval.
- Open electives, Foreign Elective and Liberal Art Courses can be chosen from the University list of Open Elective course

B.Sc - Sound Engineering (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	MSLI01 Media Communication Concepts (3-0-0) 3	SEPI01 Ear Training & Working With Instruments (2-0-2) 3	SELI01 Physics and Electronics (3-0-0) 3	SEPI03 Live and Studio Equipment (2-0-2) 3	CLL120 Human Values & Professional Ethics (2-0-0)2	CHL100 Environmental Studies (3-0-0) 3	SES101 CS-I	SERI01 GP-I 1 Credit	L	T			P				
1													15	0	4	19*15= 285	18
2	MSLI02 Media Technology (4-0-0) 4	SEPI02 Music Recording and Mixing Techniques (1-0-6) 4	SELI04 Digital Audio Workstation (0-0-6) 3	SELI02 Digital Audio and Networking Technology (3-0-0) 3	CLL130 Effective Comm-I (1-0-2) 2	SES102 CS-II (140 Hrs)* 2 Credit	SERI02 GP-II 1 Credit	9	0	15			9	0	15	24*15= 360	19
Summers	SED201 Minor Project (0-0-6) 3												0	0	6		3
3	MSL301 Media Laws and Ethics (3-0-0) 3	SEP201 Digital Music Performance (1-0-4) 3	SEP203 Electronic Music Production (1-0-6) 4	Foreign Language Elective (1-2-0) 3	CLL140 Effective Comm-II (1-0-2)2	SES201 CS-III	SER201 GP-III 1 Credit	7	2	13			7	2	13	22*15= 330	16
4	MSL302 Research Techniques (4-0-0) 4	SEP202 Acoustics and Studio Construction (2-0-2) 3	PE-I (1-0-4) 3	PE-2 (1-0-6) 4	Open Elective-I (2-0-2) 3	SES102 CS-IV (140 Hrs)* 2 Credit	SER202 GP-IV 1 Credit	10	0	14			10	0	14	24*15= 360	20
Summers	SET301 Summer Internship (0-0-10) 5												0	0	10		5
5	SEP301 Surround Sound and ATMOS Technology (1-0-4) 3	SEP303 Game Audio (1-0-4) 3	SEL301 Music Business (2-0-0) 2	SEP305 Live Sound (0-0-6) 3	Open Elective-II (2-0-2)3	SES301 CS-V	SER301 GP-V 1 Credit	6	0	16			6	0	16	22*15= 330	15
6	SET302/SET304 Internship/Case Study (0-0-12) 6	PE-3 (0-0-12) 6	PE-4 (0-0-12) 6	Open Elective-III (2-0-2)3		SES102 CS-VI (140 Hrs)* 2 Credit	SER302 GP-VI 1 Credit	2	0	38			2	0	38	40*15= 600	24
TOTAL																	120

B.Sc - Sound Engineering (2024 - 2025)

Track	Programme Electives			
	Music Production	Post Production	Production Audio	Acoustics & Studio Construction
PE-1		SEP204 Film and Game Sound (1-0-4) 3	SEP206 Production and Audio Mixing (1-0-4) 3	
PE-2	SEP212 Remix Project (1-0-6) 4	SEP208 Podcast Project (1-0-6) 4		
PE-3	SED304 Music Production Project (0-0-12) 6	SED302 Post Production Project (0-0-12) 6		
PE-4	SED308 Game Audio Project (0-0-12) 6			SED306 Studio Construction Project (0-0-12) 6

Centre for Media and Entertainment
B.Sc - Visual Communication (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core			
MSL101	Media Communication Concepts	3-0-0	3
VCP101	Fundamentals of photography	2-1-2	4
VCP103	Fundamentals of Video Production	2-1-2	4
VCP105	Design concepts and principles	2-0-2	3
VCP102	Genres of Photography	1-1-2	3
VCP104	Concepts of Cinematography	2-1-2	4
VCP106	Typography and study of brands	2-1-2	4
VCP108	Fundamentals of Digital image processing	2-1-2	4
VCP108	Media laws and ethics	3-0-0	3
VCP201	Lighting Techniques (Video & Still)	0-0-6	3
VCP203	Fundamentals of Video editing	1-1-2	3
VCP205	Design for print	1-1-2	3
VCP202	Design for web	0-1-2	2
VCP204	Fundamentals of Audio visual production	0-2-3	3
VCP206	Fundamentals of motion graphics	0-2-2	3
MSL302	Research Techniques	4-0-0	4
VCP311	Digital marketing	1-2-0	3
VCD312	Graduation Project	0-0-10	5
General Proficiency			
VCR101	General Proficiency-I	1	
VCR102	General Proficiency -II	1	
VCR201	General Proficiency -III	1	
VCR202	General Proficiency -IV	1	
VCR301	General Proficiency -V	1	
VCR302	General Proficiency -VI	1	
Community Service (CS)			
VCS101	CS- I	0	
VCS102	CS- II	2	
VCS201	CS- III	0	
VCS202	CS- IV	2	

VCS301	CS- V	0	
VCS302	CS- VI	2	
Programme/Specialization Electives			
Specialisation Elective - I			
VCP301	Commercial Photography	1-0-6	4
VCP303	Digital Video Production	1-0-6	4
VCP305	Graphic Designing	1-1-4	4
Specialisation Elective - II			
VCP307	Advance Image Processing	1-0-6	4
VCP309	Advance Video Editing	1-0-6	4
Specialisation Elective - III			
VCD302	Advertising Photography Project	1-0-6	4
VCD304	Video Production Project	1-0-6	4
Specialisation Elective - IV			
VCD306	Studio Construction Project	0-0-8	4
VCD308	Game Audio Project	0-0-8	4
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Other Mandatory Courses			
CLL130	Effective Comm-I	1-0-2	2
CLL140	Effective Comm-II	1-0-2	2
	Foreign Language Elective	1-2-0	3
	Open Elective-I	2-0-2	3
	Open Elective-II	2-0-2	3
	Open Elective-III	2-0-2	3
Project & Internship (P)			
VCT301	Summer Internship	0-0-12	6
VCD201	Minor Project	0-0-8	4

- Upto 20% of courses can be done through MOOC courses subject to department approval.
- Open electives, Foreign Elective and Liberal Art Courses can be chosen from the University list of Open Elective course

B.Sc - Visual Communication (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	Community Service	CHL100 Environmental Studies (3-0-0)3	VCS101 CS-I	VCR101 GP-I 1 Credit	21	L	T	P								
1	MSL101 Media Communication Concepts (3-0-0)3	VCPI01 Fundamentals of photography (2-1-2)4	VCPI03 Fundamentals of Video Production (2-1-2)4	VCPI05 Design concepts and principles (2-0-4) 4	CLL120 Human Values & Professional Ethics (2-0-0)2	VCS101 CS-I	VCR101 GP-I 1 Credit	12	4	8	24*15= 360	21				
2	VCPI02 Genres of Photography (1-1-2)3	VCPI04 Concepts of Cinematography (1-1-2) 3	VCPI06 Typography and study of brands (1-1-2) 3	VCPI08 Fundamentals of Digital image processing (1-1-2) 3	CLL130 Effective Comm-I (1-0-2)2	VCS102 CS-II (140 Hrs)* 2 Credit	VCR102 GP-II 1 Credit	5	4	10	19*15= 285	17				
Summers	VCD201 Minor Project (0-0-6)3													6	3	
3	MSL301 Media laws and ethics (3-0-0) 3	VCPI201 Lighting Techniques (0-0-6) 3	VCPI203 Fundamentals of Video editing (1-1-2) 3	VCPI205 Design for print (1-1-2) 3	CLL140 Effective Comm-II (1-0-2)2	VCS 201 CS-III	VCR201 GP-III 1 Credit	7	4	12	23*15= 345	18				
4	VCPI202 Design for web (0-1-2) 2	VCPI204 Fundamentals of Audio visual production (0-2-2) 3	VCPI206 Fundamentals of motion graphics (0-2-2) 3	MSL302 Research Techniques (4-0-0) 4	Open Elective-I (2-0-2)3	VCS102 CS-IV (140 Hrs)* 2 Credit	VCR202 GP-IV 1 Credit	6	5	8	19*15= 285	18				
Summers	VCT301 Summer Internship (0-0-10)5													10	5	
5	Specialisation Elective - I (0-2-8) 6	Specialisation Elective - II (0-2-4) 4	VCPI311 Digital marketing (1-2-0) 3	Open Elective-II (2-0-2)3	VCS301 CS-V	VCR301 GP-V 1 Credit	3	6	14	23*15= 345	17					
6	Specialisation Elective - III (0-0-12) 6	Specialisation Elective - IV (0-0-8) 4	VCD302 Graduation Project (0-0-10) 5	Open Elective-III (2-0-2)3	VCS102 CS-VI (140 Hrs)* 2 Credit	VCR302 GP-VI 1 Credit	2	0	32	34*15= 510	21					
TOTAL															120	

B.Sc - Visual Communication (2024 - 2025)

Programme Electives				
Track	Photography	Video Production	Graphic Design	Social Media Campaign Project
PE-1	VCP301 Commercial Photography (0-2-8) 6	VCP303 Digital Video Production (0-2-8) 6	VCP305 Graphic Designing (0-2-8) 6	
PE-2	VCP307 Advance Image Processing (0-2-4) 4	VCP309 Advance Video Editing (0-2-4) 4		
PE-3	VCD302 Advertising Photography Project (0-0-12) 6	VCD304 Video Production Project (0-0-12) 6		
PE-4			VCD306 Website Design Project (0-0-8) 4	VCD308 Social Media Campaign Project (0-0-8) 4

Centre for Media and Entertainment

B.Sc - Visual Effects and Animation (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core			
VAP101	Foundation of Art & Design	1-1-2	3
VAL101N	History and pipeline of Animation	3-0-0	3
VAP103	Graphic Design for Animation and Visual Effects	1-1-2	3
VAP105	Techniques of Videography	1-1-2	3
VAP102	Concept Art	1-1-2	3
VAP104	2D Animation	1-0-2	2
VAP106	Fundamentals of 3D	1-1-2	3
VAP108	Layer - Based Compositing	1-1-2	3
VAP112	Introduction to Compositing	1-1-2	3
VAP201	Advanced 3D	1-1-2	3
VAP203	Texturing and shading	1-1-2	3
VAP205	Lighting and Rendering for Visual Effects	1-1-2	3
VAP207	FX	1-1-2	3
VAP202	Camera tracking & Match move	1-0-2	2
VAP204	Rigging	1-1-2	3
VAP206	Advance Compositing I	1-1-2	3
VAP208	Environment Creation & Basics of Game Engine	1-0-2	2
VAP301	Sculpting for Visual Effects	1-1-4	4
VAP303	Advance Compositing II	1-1-4	4
VAP305	3D Animation	1-1-4	4
General Proficiency			
VAR101	General Proficiency-I		1
VAR102	General Proficiency -II		1
VAR201	General Proficiency -III		1
VAR202	General Proficiency -IV		1
VAR301	General Proficiency -V		1
VAR302	General Proficiency -VI		1
Programme/Specialization Electives			
PE 1			
VAD202	Pre-Production for Visual Effects short film	1-1-2	3
VAD204	Pre-Production for Animation short film	1-1-2	3

PE 2			
VAD301	Production for Visual Effects short film	1-1-2	3
VAD303	Production for Animation short film	1-1-2	3
PE 3			
VAD302	Post-Production for Visual Effects short film	1-1-2	3
VAD304	Post-Production for Animation short film	1-1-2	3
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Other Mandatory Courses			
	Open Elective - 1	2-0-2	3
	Open Elective - 2	2-0-2	3
	Open Elective - 3	2-0-2	3
	Foreign Language Elective	1-2-0	3
CLL130	Effective Comm-I	1-0-2	2
CLL140	Effective Comm-II	1-0-2	2
Project & Internship (P)			
VAD201	Minor Project: Product Advertisement	0-0-6	3
VAT301	Summer Internship	0-0-10	5
VAD306	Portfolio Development	0-0-12	6
VAT302	Animation and Visual Effects Internship	0-0-8	4
Community Service (CS)			
VAS101	CS- I		-
VAS102	CS- II		2
VAS201	CS- III		-
VAS202	CS- IV		2
VAS301	CS- V		-
VAS302	CS- VI		2

- Upto 20% of courses can be done through MOOC courses subject to department approval.
- Open electives, Foreign Elective and Liberal Art Courses can be chosen from the University list of Open Elective course

B.Sc - Visual Effects and Animation (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	VAP101 Foundation of Art & Design (1-1-2)3	VAP102 Concept Art (1-1-2)3	VAP103 Graphic Design for Animation and Visual Effects (1-1-2)3	VAP104 History and pipeline of Animation (2-0-0)2	VAP105 Techniques of Videography (1-1-2)3	VAP106 Fundamentals of 3D (1-1-2)3	VAP107 Layer - Based Compositing (1-1-2)3	VAP108 Introduction to Compositing (1-1-2)3	VAP109 Human Values & Professional Ethics (2-0-0)2	VAP110 Environmental Studies (3-0-0)3		Community Service	L	T		
1											VAS101 CS-I	10	3	6	19*15= 285	17
2	VAP201 Advanced 3D (1-1-2)3	VAP202 2D Animation (1-0-2)2	VAP203 Fundamentals of 3D (1-1-2)3	VAP204 History and pipeline of Animation (2-0-0)2	VAP205 Techniques of Videography (1-1-2)3	VAP206 Fundamentals of 3D (1-1-2)3	VAP207 Introduction to Compositing (1-1-2)3	VAP208 Human Values & Professional Ethics (2-0-0)2	VAP209 Environmental Studies (3-0-0)3	VAS102 CS-II (140 Hrs)* 2 Credit	6	4	12	22*15= 330	19	
Summers	VAD201 Minor Project (0-0-6)3													6	3	
3	VAP301 Advanced 3D (1-1-2)3	VAP302 Texturing and shading (1-1-2)3	VAP303 Lighting and Rendering for Visual Effects (1-1-2)3	VAP304 Texturing and shading (1-1-2)3	VAP305 FX (1-1-2)3	VAP306 Lighting and Rendering for Visual Effects (1-1-2)3	VAP307 Effective Comm-II (1-0-2)2	VAP308 Effective Comm-II (1-0-2)2	VAP309 Foreign Language Elective (1-2-0)3	VAS201 CS-III	6	6	10	22*15= 330	18	
4	VAP401 Camera tracking & Match move (1-0-2)2	VAP402 Rigging (1-1-2)3	VAP403 Advance Compositing I (1-1-4)4	VAP404 Rigging (1-1-2)3	PE-1 (1-1-2)3	VAP405 Advance Compositing I (1-1-4)4	VAP406 Environment Creation & Basics of Game Engine (1-0-2)2	VAP407 Environment Creation & Basics of Game Engine (1-0-2)2	VAP408 Open Elective-I (2-0-2)3	VAS102 CS-IV (140 Hrs)* 2 Credit	7	3	14	24*15= 360	20	
Summers	VAT301 Summer Internship (0-0-10)5													10	5	
5	VAP501 Sculpting for Visual Effects (1-1-4)4	PE-2 (1-1-2)3	VAP502 Advance Compositing II (1-1-4)4	PE-2 (1-1-2)3	VAP503 3D Animation (1-1-4)4	VAP504 Advance Compositing II (1-1-4)4	VAP505 Open Elective-II (2-0-2)3	VAP506 Open Elective-II (2-0-2)3	VAP507 Open Elective-III (2-0-2)3	VAS301 CS-V	6	4	16	26*15= 390	19	
6	PE-3 (1-1-2)3	VAD306 Portfolio Development (0-0-12)6	VAT302 Animation and Visual Effects Internship (0-0-8)4	VAD306 Portfolio Development (0-0-12)6		VAT302 Animation and Visual Effects Internship (0-0-8)4			VAS102 CS-VI (140 Hrs)* 2 Credit	3	1	24	28*15= 420	19		
TOTAL															120	

B.Sc Visual Effects and Animation (2024 - 2025)

Programme Electives	
Track	Visual Effects
PE-1	<p>VAD202 Pre-Production for Visual Effects Short Film (1-1-2) 3</p> <p>VAD301 Production for Visual Effects Short Film (1-1-2) 3</p> <p>VAD302 Post-Production for Visual Effects Short Film (1-1-2) 3</p>
PE-2	<p>VAD204 Pre-Production for Animation Short Film (1-1-2) 3</p> <p>VAD303 Production for Animation Short Film (1-1-2) 3</p> <p>VAD304 Post-Production for Animation Short Film (1-1-2) 3</p>
PE-3	

Centre for Media and Entertainment
BCA - Game Development (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core			
MAL111	Mathematics & Statistics	2-1-0	3
MSP101	Programming using C	2-0-4	4
MSL103	Computer Architecture & Organization	3-0-0	3
MSP103	Introduction to Linux	2-0-4	4
MSP102	Programming using C++	1-0-4	3
MSL104	Data Structures	1-0-4	3
MSP104	Programming in Java	1-0-4	3
MSP106	Database Management System	1-0-4	3
MST102	Software Engineering	3-0-0	3
GDP201	Game Design Basics	2-0-2	3
MSP201	Programming in Python	1-0-2	2
GDP203	Introduction to Game Engine	1-0-4	3
GDP205	Programming Using C#	2-0-2	3
GDP211	HTML Basic	1-0-2	2
GDL202	Data Communication & Networks	2-0-0	2
GDP202	2D/3D Game Development	1-0-4	3
GDP204	Introduction to AR/VR	1-0-4	3
GDP212	HTML Game Development	1-0-2	2
GDP301	AR VR Advance	1-0-4	3
GDP303	Multiplayer Programming	1-0-4	3
GDP305	AI for Game Development	1-0-4	3
GDP306	Integrating Online Services	1-0-2	2
GDP307	Game Development I	1-0-4	3
GDP304	Game Development II	1-0-4	3
General Proficiency			
GDR101	General Proficiency-I		1
GDR102	General Proficiency -II		1
GDR201	General Proficiency -III		1
GDR202	General Proficiency -IV		1
GDR301	General Proficiency -V		1
GDR302	General Proficiency -VI		1

Programme/Specialization Electives			
PE 1			
GDP207	Programming Concept using Scratch	1-0-4	3
GDP209	Introduction to Stop Motion Animation	1-0-4	3
PE 2			
GDP206	Programming Concept Using Construct	1-0-4	3
GDP208	Level Design Through Game Editors	1-0-4	3
PE 3			
GDP309	Creating 2D / 3D Game	1-0-4	3
GDP311	Creating VR Game	1-0-4	3
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Other Mandatory Courses			
	Open Elective - 1	2-0-2	3
	Open Elective - 2	2-0-2	3
	Open Elective - 3	2-0-2	3
	Foreign Language Elective	1-2-0	3
CLL130	Effective Comm-I	1-0-2	2
CLL140	Effective Comm-II	1-0-2	2
Project & Internship (P)			
BCD201	Minor Project	0-0-6	3
BCT301	Summer Internship	0-0-10	5
VAD201	Minor Project	0-0-12	6
VAT302	Animation and Visual Effects Internship	0-0-8	4
Community Service (CS)			
GDS101	CS- I		-
GDS102	CS- II		2
GDS201	CS- III		-
GDS202	CS- IV		2
GDS301	CS- V		-
GDS302	CS- VI		2

- Upto 20% of courses can be done through MOOC courses subject to department approval.
- Open electives, Foreign Elective and Liberal Art Courses can be chosen from the University list of Open Elective courses.

BCA - Game Development (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	Community Service	CLL120 Human Values & Professional Ethics (2-0-0) 2	CHL100 Environmental Studies (3-0-0) 3	MSP103 Introduction to Linux (1-0-4) 3	MSL103 Computer Architecture & Organization (3-0-0) 3	MSP101 Programming using C (2-0-2) 3	MSP102 Mathematics & Statistics (2-1-0) 3	MSP104 Data Structures (1-1-0) 2	MSP104 Programming in Java (1-0-4) 3	MST102 Software Engineering (2-0-0) 2		MSP106 Database Management System (1-0-2) 2	L	T		
1	GDS101 CS-I											13	1	6	20X15= 300	18
2	GDS102 CS-II (140 Hrs)* 2 Credit											9	1	8	18X15= 270	17
Summers		BCD201 Minor Project (0-0-6) 3													6	3
3	GDS201 CS-III	CLL140 Effective Comm-II (1-0-2)2	PE-1 (1-0-4) 3	GDP205 Programming Using C# (2-0-2) 3	GDP203 Introduction to Game Engine (1-0-4) 3	MSP201 Programming in Python (1-0-2) 2	GDP201 Game Design Basics (2-0-2) 3	MSP201 Programming in Python (1-0-2) 2	GDP203 Introduction to Game Engine (1-0-4) 3	PE-1 (1-0-4) 3	GDP205 Programming Using C# (2-0-2) 3	9	0	18	27X15= 405	19
4	GDS202 CS-IV (140 Hrs)* 2 Credit	Foreign Language Elective (1-2-0) 3	Open Elective-I (2-0-2) 3	PE-2 (1-0-4) 3	GDP204 Introduction to AR/VR (1-0-4) 3	GDP202 2D/3D Game Development (1-0-4) 3	GDL202 Data Communication & Networks (2-0-0) 2	GDP204 Introduction to AR/VR (1-0-4) 3	Open Elective-I (2-0-2) 3	PE-2 (1-0-4) 3	GDP212 HTML Game Development (1-0-2) 2	9	2	16	27X15= 405	22
Summers		BCT301 Summer Internship (0-0-10) 5													10	5
5	GDR301 GP-V 1 Credit	Open Elective-II (2-0-2) 3	PE-3 (1-0-4) 3	GDP307 Game Development I (1-0-4) 3	GDP305 AI for Game Development (1-0-4) 3	GDP303 Multiplayer Programming (1-0-4) 3	GDP301 AR VR Advance (1-0-4) 3	GDP305 AI for Game Development (1-0-4) 3	PE-3 (1-0-4) 3	GDP307 Game Development I (1-0-4) 3	GDP301 GP-V 1 Credit	7	0	22	29X15= 435	19
6	GDR302 GP-VI 1 Credit	Open Elective-III (2-0-2)3			GDP306 Integrating Online Services (1-0-2) 2	GDP304 Game Development II (1-0-4) 3	GDP302 Major Project (0-0-12) 6	GDP306 Integrating Online Services (1-0-2) 2			GDR302 GP-VI 1 Credit	4	0	20	24X15= 360	17
TOTAL															120	

BCA - Game Development (2024 - 2025)

Programme Electives	
Track	Visual Programming
PE-1	GDP207 Programming Concept using Scratch (1-0-4) 3
PE-2	GDP206 Programming Concept using Construct (1-0-4) 3
PE-3	GDP309 Creating 2D/3D Game (1-0-4) 3
	Art and Animation GDP209 Introduction to Stop Motion Animation (1-0-4) 3
	GDP208 Level Design through Game Editors (1-0-4) 3
	GDP311 Creating VR Game (1-0-4) 3

Centre for Media and Entertainment

BCA - Media and Information Technology (2024 - 2025)

Code	Programme Core	L-T-P	C
Programme Core			
MAL111	Mathematics & Statistics	2-1-0	3
MSP101	Programming using C	2-0-4	4
MSL103	Computer Architecture & Organization	3-0-0	3
MSP103	Introduction to Linux	2-0-4	4
MSP102	Programming using C++	1-0-4	3
MSL104	Data Structures	1-0-4	3
MSP104	Programming in Java	1-0-4	3
MSP106	Database Management System	1-0-4	3
MST102	Software Engineering	3-0-0	3
MSP201	Programming in Python	2-0-2	3
MSL203	Numerical Techniques and Optimization Methods	2-0-0	2
MSL201	Production Pipeline for Game and VFX	2-1-0	3
MSL205	Render Management	2-0-0	2
MSL202	Data Communication & Computer Networks	1-1-0	2
MSP202	Advanced Python Lab	2-0-2	3
MSL305	Tools and techniques used in Game & VFX - I	3-0-0	3
MSP204	VFX Production Process	1-0-2	2
MSP301	Advanced Java Lab	2-0-2	3
MSL305	Tools and techniques used in Game & VFX - II	3-0-0	3
MSL303	Artificial Intelligence	2-1-0	3
MSL304	Game Testing	2-0-0	2
MSP303	Game Production process	1-0-4	3
MSP304	Rotopaint	1-0-4	3
MSP207	Web Technology	1-0-4	3
General Proficiency			
MSR101	General Proficiency-I		1
MSR102	General Proficiency -II		1
MSR201	General Proficiency -III		1
MSR202	General Proficiency -IV		1
MSR301	General Proficiency -V		1
MSR302	General Proficiency -VI		1

Programme/Specialization Electives			
PE 1			
GDP205	Introduction to Stop Motion Animation	1-0-4	3
MSP205	Introduction to Augmented Reality (AR) or Virtual Reality (VR)	1-0-4	3
PE 2			
GDP206	Programming Concept using Construct	1-0-4	3
GDP208	Level Design Through Game Editors	1-0-4	3
PE 3			
MSP305	Design of web based student Management system	1-0-4	3
MSP307	Creating Data base application	1-0-4	3
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Other Mandatory Courses			
	Open Elective - 1	2-0-2	3
	Open Elective - 2	2-0-2	3
	Open Elective - 3	2-0-2	3
	Foreign Language Elective	1-2-0	3
CLL130	Effective Comm-I	1-0-2	2
CLL140	Effective Comm-II	1-0-2	2
Project & Internship (P)			
BCD201	Minor Project	0-0-6	3
BCT301	Summer Internship	0-0-10	5
VAD201	Minor Project	0-0-12	6
VAT302	Animation and Visual Effects Internship	0-0-8	4
Community Service (CS)			
MSS101	CS- I		-
MSS102	CS- II		2
MSS201	CS- III		-
MSS202	CS- IV		2
MSS301	CS- V		-
MSS302	CS- VI		2

BCA - Media and Information Technology (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	MSPI01	MALI01	MSP101	MSLI03	MSP103	CHLI00	CLLI20	MSSI01	MSRI01	L			T	P			
1	MSP101 Programming using C (2-0-2) 3	MALI01 Mathematics & Statistics (2-1-0) 3	MSLI03 Computer Architecture & Organization (3-0-0) 3	MSP103 Introduction to Linux (1-0-4) 3	CHLI00 Environmental Studies (3-0-0) 3	CLLI20 Human Values & Professional Ethics (2-0-0) 2	MSSI01 CS-I	MSRI01 GP-I 1 Credit	13	1	6	20X15=300	18				
2	MSP104 Data Structures (1-1-0) 2	MSP102 Programming using C++ (1-0-4) 3	MSLI04 Programming in Java (1-0-4) 3	MSP106 Database Management System (1-0-2) 2	MST102 Software Engineering (2-0-0) 2	CLLI30 Effective Comm-I (1-0-2) 2	MSSI02 CS-II (140 Hrs)* 2 Credit	MSRI02 GP-II 1 Credit	9	1	8	18X15=270	17				
Summers	BCD201 Minor Project (0-0-6) 3													6	3		
3	MSP201 Production Pipeline for Game and VFX (2-1-0) 3	MSP201 Programming in Python (2-0-2) 3	MSL203 Numerical Techniques and Optimization Methods (2-0-0) 2	MSL205 Render management (2-0-0) 2	PE-1 (1-0-4) 3	CLLI40 Effective Comm-II (1-0-2)2	MSS201 CS-III	MSR201 GP-III 1 Credit	11	1	12	24X15=360	19				
4	MSP202 Advanced Python Lab (2-0-2) 3	MSL202 Data Communication & Computer Networks (1-1-0) 2	MSL204 Tools and Techniques used in Game & VFX - I (3-0-0) 3	PE-2 (1-0-4) 3	Open Elective-I (2-0-2) 3	Foreign Language Elective (1-2-0) 3	MSSI02 CS-IV (140 Hrs)* 2 Credit	MSR202 GP-IV 1 Credit	11	3	10	24X15=360	22				
Summers	BCT301 Summer Internship (0-0-10) 5													10	5		
5	MSP301 Advanced Java Lab (2-0-2) 3	MSP305 Tools and Techniques used in Game and VFX - II (3-0-0) 3	MSL303 Artificial Intelligence (2-1-0) 3	MSP303 Game production process (1-0-4) 3	PE-3 (1-0-4) 3	Open Elective-II (2-0-2) 3	MSS301 CS-V	MSR301 GP-V 1 Credit	11	1	12	24X15=360	19				
6	MSP302 Major Project (0-0-12) 6	MSP304 Rotopoint (1-0-4) 3	MSL304 Game Testing (2-0-0) 2	Open Elective-III (2-0-2)3			MSS102 CS-VI (140 Hrs)* 2 Credit	MSR302 GP-VI 1 Credit	5	0	18	23X15=345	17				
TOTAL																120	

BCA - Media and Information Technology (2024 - 2025)

Programme Electives	
Track	Visual Programming
PE-1	<p>Introduction to Augmented Reality (AR) or Virtual Reality (VR) MSP205 (1-0-4) 3</p>
PE-2	<p>Programming Concept using Construct GDP206 (1-0-4) 3</p>
PE-3	<p>Creating Database Application MSP307 (1-0-4) 3</p>
	<p>Art and Animation</p> <p>Introduction to Stop Motion Animation GDP209 (1-0-4) 3</p> <p>Level Design through Game Editors GDP208 (1-0-4) 3</p> <p>Design of Web based Student Management System MSP305 (1-0-4) 3</p>

DEPARTMENT OF MULTIDISCIPLINARY ENGINEERING

The department of Multidisciplinary Engineering offers the following programmes during the academic year 2024-2025.

1. Master of Technology (M.Tech.) in Civil Engineering with specialization in

- Structural Engineering
- Construction Engineering & Management
- Environmental Engineering

M.Tech. in Civil Engineering programme for regular students/ working professionals will impart research-based knowledge in the selected disciplines of Civil Engineering. The M.Tech. programme will be of 2 years with 4 semesters. The programme has total credits of 70. Also, the student can exit after 1 year of M.Tech. programme with a PG diploma in respective specialization completing 50 credits in total. The curriculum is designed in such a way that there are core subjects relevant to overall civil engineering and programme electives specific to the respective specializations. Specialization based seminar, minor project, and dissertation in structural engineering, Construction engineering and Management, and Environmental engineering completes the requirement of a Masters' degree in Civil Engineering domain.

2. Master of Technology (M.Tech.) in Electronics and Communication Engineering with specialization in

- Semiconductor Technology
- IOT & 5G

M.Tech ECE (2 years) is a well - balanced, industry driven, and research aligned curriculum that ensures integrating theory with real-world applications. Holistic pedagogy and emphasis on development of additional technical skills helps students to head start their career in core industries. PG Diploma (Exit option after one year for PG Diploma in relevant specialization) is a 1 year of study in the M.Tech programme followed by an exit of 10 credit bridge courses lasting two months, including a 7-credit job-specific internship/apprenticeship and 3 credit skill based course that would help the graduates acquire job ready competencies required to enter the workforce.

3. Master of Technology (M.Tech.) in Mechanical Engineering with specialization in

- Thermal Engineering
- Mechanical Engineering Design
- Production and Industrial Engineering
- Electrical Vehicles

M.Tech ME (2 years): A well - balanced, industry driven and research aligned curriculum that ensures integrating theory with real-world applications. Holistic pedagogy and emphasis on development of additional technical skills helps students to head start their career in core industries. PG Diploma - Exit option after one year for PG Diploma in relevant specialization

Department of Multidisciplinary Engineering

Master of Technology (M.Tech.) in Civil Engineering (2024 - 2025)

Programme Core			
1	Safety and reliability analysis (CEL501)		
2	Optimization techniques in civil engineering (CEL502)		
3	Research Methodology (MAL616)	8	Open Elective
4	Seminar (CEC501)	9	Community Service- I (CES500)
5	Minor Project (CED502)	10	Community Service- II (CES502)
6	Dissertation- I (CED601)	11	Community Service- III (CES600)
7	Dissertation- II (CED602)	12	Community Service- IV (CES602)
Programme Electives			
	Structural Engineering	Construction Engineering & Management	Environmental Engineering
1	Advanced Concrete Technology (CEL503)	Advanced Concrete Technology (CEL503)	Environmental Impact and Risk Assessment (CEL519)
2	Sustainable Built Environment (CEL506)	Construction and Contract Management (CEL513)	Environmental Chemistry (CEL520)
3	Advanced Design of Foundations CEL503	Infrastructure Development and Management (CEL514)	Water Supply Engineering (CEL521)
4	Design of Industrial Structures (CEL507)	Resource Management and Control in Construction (CEL515)	Industrial Waste Management (CEL522)
5	Prestressed Concrete Structures (CEL 508)	Construction Economics and Finance (CEL516)	Geo-Environmental Engineering (CEL523)
6	Structural Health Monitoring-NDT (CEL619)	Shoring, Scaffolding and Formwork (CEL504)	Global Climate Change Adaptation and Mitigation (CEL524)
7	Earthquake Resistant Design of Structures (CEL518)	Quality & Safety in Construction (CEL527)	Wastewater Engineering (CEL525)
8	Finite Element Analysis (CEL509)	Strategic Technology Management (CEL517)	Environmental Policy, Legislation (CEL526)
9	Structural Dynamics (CEL510)	Flexible System Management (CEL606)	Advanced Wastewater Treatment (CEL610)
10	Theory of Elasticity & Plasticity (CEL 601)	Advanced Methods for management research (CEL608)	Air Pollution and Control (CEL611)
11	Principles of Bridge Engineering (CEL512)	Project Planning and Control (CEL608)	Solid and Hazardous Waste Management (CEL612)
12	Matrix Methods of Structural Analysis (CEL602)	Organizational Management (CEL609)	Environmental Hydraulics and Hydrology (CEL613)
13	Prefabricated Structures (CEL603)	Construction Planning and Management (CEL529)	Environmental Modeling and Simulation (CEL613)
14	Theory of plates and shells (CEL604)	Contract Laws and Regulation (CEL617)	Environmental Remediation of Contaminated Sites (CEL615)
15	Design of Tall Structures (CEL605)	Functional Planning, Building Services, & Maintenance Management (CEL528)	Environment and Ecology (CEL616)
16	Advanced Design of Concrete Structures (CEL617)	--	--
17	Repair & Rehabilitation of Structures (CEL618)	--	--
Bridge Courses (for PG Diploma)			
1	Skill Based Course (CEV502)		
2	Industrial Internship (CET502)		

M.Tech. in Civil Engineering with 2 years exit (2024 - 2025)
(Structural Engineering / Construction Engineering & Management / Environmental Engineering)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CEL501 Safety & Reliability Analysis 3-0-0 (3)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	PE-3 3-0-2 (4)	CEC501 Seminar 0-0-4 (2)	CES500 Community Service	12	0	10	22	17
II	CEL502 Optimization Techniques in Civil Engineering 3-0-2 (4)	PE-4 3-0-2 (4)	PE-5 3-0-2 (4)	PE-6 3-0-2 (4)	CEC502 Minor Project 0-0-10 (5)	CES502 Community Service (2)* (140 hours)	12	0	18	20	23
III	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)	PE-7 3-0-2 (4)	CEC601 Dissertation-I 0-0-12 (6)		CES600 Community Service	7	1	16	12	16
IV	CEC602 Dissertation-II 0-0-24 (12)					CES602 Community Service (2)* (140 hours)	0	0	24	--	14
TOTAL CREDITS OF THE M.TECH. DEGREE PROGRAMME = 70											70

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year
PE- Programme Elective OE- Open Elective

PG Diploma in Civil Engineering with 1 year exit (2024 - 2025)
(Structural Engineering / Construction Engineering & Management / Environmental Engineering)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	CEL501 Safety & Reliability Analysis 3-0-0 (3)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	PE-3 3-0-2 (4)	CEC501 Seminar 0-0-4 (2)	CES500 Community Service	12	0	10	22	17
II	CEL502 Optimization Techniques in Civil Engineering 3-0-2 (4)	PE-4 3-0-2 (4)	PE-5 3-0-2 (4)	PE-6 3-0-2 (4)	CED502 Minor Project 0-0-10 (5)	CES502 Community Service (2)* (140 hours)	12	0	18	20	23
Summer	CEV502 Skill Based Course (3)	CET502 Industrial Internship (7)									10
EXIT OPTION: PG DIPLOMA in respective specialization; TOTAL CREDITS = 50											50

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year
PE- Programme Elective OE- Open Elective

Master of Technology (M.Tech) in Electronics & Communication Engineering (2024 - 2025)
with specialization in (1) Semiconductor Technology (2) IOT & 5G

Programme Core	
ECL507 - System Design & Modeling	ECS501 Community Service-I
ECL532 - Embedded System Design	ECS502 Community Service-II
ECD509 - Optimization Theory and Applications	ECS601 Community Service-III
ECL513 - Machine Learning	ECS602 Community Service-IV
MAL616 - Research Methodology	
Programme Electives	
	Other Programme Electives
	(For award of specialization in Semiconductor Technology/IOT & 5G, it is mandatory to complete any four PE from the list of courses as mentioned above under respective tracks
	IOT & 5G
Semiconductor Technology	
ECL581 Micro & Nano Fabrication	ECL528 Analog VLSI Design
ECL583 Semiconductor Equipment & Technology	ECL523 Digital VLSI Design
ECL584 Semiconductor Material Synthesis and Characterization Techniques	ECL524 Low Power VLSI Design
ECL585 Semiconductor Packaging and Testing Techniques	ECL529 Linux & Scripting
ECL586 ASIC's & FPGA	ECL527 Digital System Design with Verilog HDL
	ECL587 VLSI Design Verification & Testing
	ECL588 MEMS & NEMS
	ECL589 Special Topics in Semiconductor Technologies and Applications
	ECL540 Real Time Systems and Software
	ECL601 Cloud Computing
	ECL659 Global Navigation Satellite Systems and Applications
	ECL596 Network and Security in IoT
	ECL597 Industrial IoT for Smart Cities
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Bridge Course (for PG Diploma)	
ECV502 Skill Based Course	ECL598 IoT Design for Connected Health Care
	ECL595 Edge And Fog Computing
	ECL596 Network and Security in IoT
	ECL599 Special Topics in IOT & 5G

**M. Tech in ECE (with specialization in Semiconductor Technology/IOT & 5G)
M.Tech full time (2 years) (2024 - 2025)**

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	ECL507 System Design & Modeling 3-0-2(4)	ECL509 Optimization Theory and Applications 3-0-2(4)	Programme Elective-1 3-0-2(4)	Programme Elective-2 3-0-2 (4)	ECC509 Seminar 0-0-4(2)	ECS501 Community Service	12	0	12	24	18
II	ECL532: Embedded System Design 3-0-2(4)	ECL513 Machine Learning 2-0-2(3)	Programme Elective-3 3-0-2(4)	Programme Elective-4 3-0-2(4)	ECD512 Minor Project 0-0-10(5)	ECS502 Community Service (140 hours = 2 credit)*	11	0	18	19	22
III	MAL616 Research Methodology 2-1-0(3)	Open Elective 2-0-2(3)	ECD605 Dissertation-I 0-0-12(6)	Programme Elective-5 3-0-2(4)		ECS601 Community Service	7	1	16	12	16
IV	ECD602 Dissertation-II 0-0-24(12)					ECS602 Community Service (140 hours = 2 credit)*	0	0	24	-	14
TOTAL CREDITS OF THE M.TECH DEGREE PROGRAMME = 70											70

*Students can utilize the summer/winter break period to complete the 140 Community Service hours every year

**M. Tech in ECE (with specialization in Semiconductor Technology/IOT & 5G)
PG Diploma with 1 year exit (2024 - 2025)**

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	ECL507 System Design & Modeling 3-0-2(4)	ECL509 Optimization Theory and Applications 3-0-2(4)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	ECC509 Seminar 0-0-4(2)	ECS501 Community Service	12	0	12	24	18
II	ECL532: Embedded System Design 3-0-2(4)	ECL513: Machine Learning 2-0-2(3)	PE-3 3-0-2 (4)	PE-4 3-0-2 (4)	ECD512 Minor Project 0-0-10(5)	ECS502 Community Service (140 hours = 2 credit)*	11	0	18	19	22
Summer	ECV502 Skill based course (3)	ECT502 Industrial Internship (7)									10
EXIT OPTION: PG DIPLOMA; TOTAL CREDITS = 50											50

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

**M.Tech in Mechanical Engg.with Specialisation in Mechanical Engineering Design/ Thermal Engineering/
Production and Industrial Engineering/ Electric Vehicles (2024 - 2025)**

PROGRAMME CORE			
MEL510 Introduction to FEM	MAL616 Research Methodology	MED602 Dissertation-II	
MEL613-IP Project Management	Open Elective-I	MES501 Community Service-I	
MEL550 Advanced Heat and Mass Transfer	MEC601 Seminar	MES502 Community Service-II	
MEL560 Advanced Machine Design	MED502 Minor Project	MES601 Community Service-III	
MEL570 Production and Operation Management	MED601 Dissertation-I	MES602 Community Service-IV	
PROGRAMME ELECTIVE-1, 2, 3 & 4 (For Specialization in Mechanical Engineering Design)	PROGRAMME ELECTIVE-1, 2, 3 & 4 (For Specialization in Thermal Engineering)	PROGRAMME ELECTIVE-1, 2, 3 & 4 (For Specialization in Electric Vehicles)	
MEL603-MD Design for manufacturing assembly (3-0-2) 4	MEL601-TH Computational Fluid Dynamics and Heat Transfer (3-0-2) 4	AEL531 EnergyStorage, BMS& BTMS(3-0-2) 4	
MEL607-MD Advanced Mechanics of Solids (3-0-2) 4	MEL609-TH Modern Power Plants (3-0-2) 4	AEL533 Advanced VehiclePowertrain(3-0-2) 4	
MEL617-MD Composite Materials (3-0-2) 4	MEL611-TH Renewable Energy Systems (3-0-2) 4	AEL532 Advanced Automotive Electronics (3-0-2) 4	
MEL625-MD Vibration & Noise Engineering (3-0-2) 4	MEL621-TH Analysis of IC Engine systems (3-0-2) 4	AEL534 Advanced Vehicle Dynamics (3-0-2) 4	
MEL627-MD Mechatronics (3-0-2) 4	MEL520-Advanced Thermodynamics (3-0-2) 4	AEL631 Advanced Quality, Reliability and maintenance Engineering (3-0-2) 4	
MEL420- Advanced Theory of Machines (3-0-2) 4	MEL410- Design of Thermal Systems (3-0-2) 4	AEL633 Smart Mobility and Data Analytics (3-0-2)4	
		AEL635 Advanced Charging Infrastructure for EV (3-0-2) 4	

**M.Tech in Mechanical Engg.with Specialisation in Mechanical Engineering Design/Thermal Engineering/
Production and Industrial Engineering/Electric Vehicles)
2 Years M.Tech.programme (2024 - 2025)**

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	MEL510 Introduction to FEM 2-1-0 (3)	MEL613-IP Project Management 3-0-2 (4)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	MEC601 Seminar 0-0-4 (2)	MES501 Community Service	11	1	10	22	17
II	MEL550 Advanced Heat and Mass Transfer 3-1-0 (4)	MEL560 Advanced Machine Design 3-0-2 (4)	MEL570 Production and Operation Management 3-1-0 (4)	PE-3 3-0-2 (4)	MED502 Minor Project 0-0-10 (5)	MES502 Community Service (140 hrs=2 credit)*	12	2	14	28	23
III	OE 2-0-2 (3)	MAL616 Research Methodology 2-1-0 (3)	PE-4 3-0-2 (4)	MED601 Dissertation-I 0-0-12 (6)		MES601 Community Service	7	1	16	12	16
IV	MED602 Dissertation-II 0-0-24 (12)					MES602 Community Service (140 hours = 2 credit) *	0	0	24	--	14
TOTAL CREDITS OF THE M.TECH DEGREE PROGRAMME = 70											70

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

PG Diploma with 1 year exit (2024 - 2025)

Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	L	T	P	Weekly Contact Hours	Credits
I	MEL510 Introduction to FEM 2-1-0 (3)	MEL613-IP Project Management 3-0-2 (4)	PE-1 3-0-2 (4)	PE-2 3-0-2 (4)	MEC601 Seminar 0-0-4 (2)	MES501 Community Service	11	1	10	22	17
II	MEL550 Advanced Heat and Mass Transfer 3-1-0 (4)	MEL560 Advanced Machine Design 3-0-2 (4)	MEL570 Production and Operation Management 3-1-0 (4)	PE-3 3-0-2 (4)	MED502 Minor Project 0-0-10 (5)	MES502 Community Service (140 hrs=2 credit)*	12	2	14	28	23
Summer	MEV502 Skill Based Course (3)	MET502 Industrial Internship (7)									10
TOTAL CREDITS = 50											50

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

NCU SCHOOL OF BUSINESS

The School of Business offers two programmes from the academic year 2024-26. These are MBA and MBA – Business Analytics. Both these programmes are AICTE approved. The first year of study is common to students of both MBA and MBA Business Analytics with just one exception. Students of the MBA Business Analytics programme will have to mandatorily do a course, “*Python for Data Analysis*” during Semester 2 since it will be a prerequisite for most courses in the Business Analytics curriculum in the second year. This “*Python for Data Analysis*” course shall be optional for the MBA students who will be offered an alternate course - “*Marketing Research*” in case they opt out of “*Python for Data Analysis*”.

Programme Highlights (MBA and MBA- Business Analytics):

Experiential Learning:

We adopt pedagogies such as case method of teaching, role playing, simulation etc. to ensure active engagement of our students in the learning process. The hands-on thematic workshops and projects also help “Learning-by-doing”. The mandatory 2-month summer internship gives our students a first-hand feel of the business world and the realities of the work environment.

Practical Orientation:

Our unique blend of pure academicians and Professors of Practice (POP) in the faculty pool brings the necessary practical orientation for a management class. It would be the dream and pleasure of every seeker of management education to learn from the long years of experience of erstwhile practitioners (like our PoPs) and hear from the horse’s mouth on unique management experiences and learnings on-the-job of such veterans.

Futuristic Curriculum:

Through a periodic reconnaissance of the management trends, we update our curriculum to include new-age courses and workshops and weed out sunseting topics to ensure our graduates are abreast of the latest tools and trends as they enter the business world and are also sufficiently future ready.

π -shaped honing of skills:

Through a meticulous design of the curriculum, our students gather the breadth of knowledge during the first year of study by means of core courses covering all the major management disciplines and then gather depth in a couple of areas during the second year, by choosing elective courses in their preferred areas of specialization from the whole set of electives offered from the various specialization areas.

Course Structure for MBA and MBA Business Analytics (2024 - 2025)

MASTER OF BUSINESS ADMINISTRATION OVERALL CREDIT STRUCTURE			
Category			Credits
Programme Core			44
Skill/Ability Enhancement			11
Project / Hands-on Practice			6
General Proficiency			4
Programme Electives			36
Total Credits			101
Programme Core		L-T-P	Credits
BSL516	Entrepreneurship and Innovation	3-0-0	3
BSL502	Management of Human Resources	3-0-0	3
BSL519	Organizational Behavior 1	3-0-0	3
BSL504	Financial Management	3-0-0	3
BSL505	Marketing Management	3-0-0	3
BSL509	Managerial Economics	3-0-0	3
BSL511	Business Statistics	3-0-0	3
BSL521	Financial Reporting and Control	3-0-0	3
BSL513	Operations Management	3-0-0	3
BSL522 / BSP508	Marketing Research/ Python for Data Analysis	3-0-0/2-0-2	3
BSL523	Indian Financial Systems	3-0-0	3
BSL525	Information Systems for Business	2-0-0	2
BSL526	Sales and Distribution Management	3-0-0	3
BSL528	Organizational Behaviour 2	3-0-0	3
BSL603	Strategic Management	3-0-0	3
General Proficiency			
BSR501	GP I		1
BSR502	GP II		1
BSR601	GP III		1
BSR602	GP IV		1
Skill/Ability Enhancement			
BSC501	Business Communication	1-0-0	1
BSC502	Digital Transformation	1-0-0	1
BSC504	Introduction to AI	1-0-0	1
BSC506	Team Building and Work Ethics	1-0-0	1
BSC601	Leadership and Executive Presence	1-0-0	1
BSC602	Introduction to Sustainable Business	1-0-0	1
BSC603	Introduction to Consulting	1-0-0	1
BSC604	Global Trends in Management	1-0-0	1
BSC606	Legal Framework of Business	1-0-0	1
BSP504	Advanced Excel	0-0-4	2
Project/Hands-on Practice			
BST601	Summer Internship		6
Programme Electives			
Marketing			
BSL632	Services Marketing	3-0-0	3
BSL611	Marketing Strategy	3-0-0	3
BSL612	Brand Management	3-0-0	3
BSL613	New Product Development	3-0-0	3
BSL636	Integrated Marketing Communication	3-0-0	3
BSL683	Marketing Analytics	3-0-0	3
BSL638	Digital Marketing & Social Media	3-0-0	3
BSL508	Consumer Behaviour	3-0-0	3
Finance			
BSL616	Business Valuation	3-0-0	3
BSL643	Financial Derivatives	3-0-0	3
BSL617	Corporate Finance and Treasury Management	3-0-0	3
BSL618	Introduction to Fintech	3-0-0	3
BSL648	Mergers and Acquisitions	3-0-0	3
BSL619	International Trade and Finance	3-0-0	3
BSL621	Managing Business Risks	3-0-0	3
BSL695	Securities Analysis and Portfolio Management	3-0-0	3
BSL697	Management of Retail Financial Institutions	3-0-0	3
BSL698	Strategic Financial Management	3-0-0	3
Business Analytics			
BSL622	Applied Machine Learning	2-0-2	3
BSL623	Generative AI	2-0-2	3
BSL624	Deep Learning	2-0-2	3
BSL625	Block Chain and Applications	2-0-2	3

BSL626	Natural Language Processing	2-0-2	3
BSL676	Big Data Analytics	2-0-2	3
BSL680	Data Visualization and Expression	2-0-2	3
BSL689	SQL for Data Analysis	2-0-2	3
Human Resources			
BSL627	Compensation and Benefits	3-0-0	3
BSL628	Employee Relations	3-0-0	3
BSL656	Industrial Relations & Labour Laws	3-0-0	3
BSL657	Workforce Planning, Recruitment and Selection	3-0-0	3
BSL661	Training and Development	3-0-0	3
BSL662	Organizational Development	3-0-0	3
BSL666	Talent Management	3-0-0	3
BSL699	HR Analytics	3-0-0	3
General Management			
BSL524	Logistics and Supply Chain Management	3-0-0	3
BSL614	Design Thinking (Cross-Listed with Marketing)	3-0-0	3
BSL615	Behavioural Economics for Managers (Cross-Listed with Marketing)	3-0-0	3

SCHEME OF STUDY (2024-2025) FOR MBA & MBA Business Analytics

SEM	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Course 7	Course 8	Course 9	Course 10	General Proficiency	Courses	Contact / Week			Credits	
													L	T	P		
I	BSL505 Marketing Management (3-0-0)3	BSL519 Organizational Behaviour I (3-0-0)3	BSL521 Financial Reporting and Control (3-0-0)3	BSL523 Indian Financial Systems (3-0-0)3	BSL509 Managerial Economics (3-0-0)3	BSL511 Business Statistics (3-0-0)3	BSL525 Information Systems for Business (2-0-0)2	BSP504 Advanced Excel (0-0-4)2	BSC501 Business Comm (1-0-0)1	BSC501 Business Comm (1-0-0)1	BSR501 GP I 1 Credit	10	21	0	4	24	
	BSL502 Management of Human Resources (3-0-0)3	BSL504 Financial Management (3-0-0)3	BSL526 Sales and Distribution (3-0-0)3	BSL513 Operations Management (3-0-0)3	BSL522/ BSP508 Marketing Research/Python for DA (3-0-0)3/ (2-0-2)3	BSL516 Entrepreneurship and Innovation (3-0-0)3	BSL528 Organizational Behaviour 2 (3-0-0)3	BSC502 Digital Transformation (1-0-0)1	BSC504 Intro to AI (1-0-0)1	BSC506 Team Building and Work Ethics (1-0-0)1	BSR502 GP II 1 Credit	11	24/23	0	0/2	25	
	BST601 Summer Internship (6 credits) / Exit option																6
III	BSL603 Strategic Management (3-0-0)3	Elective 1 (Major) (3-0-0 / 2-0-2) 3	Elective 2 (Major) (3-0-0 / 2-0-2) 3	Elective 3 (Major) (3-0-0 / 2-0-2) 3	Elective 4 (Major) (3-0-0 / 2-0-2) 3	Elective 1 Minor/Open (3-0-0 / 2-0-2) 3	Elective 2 Minor/Open (3-0-0 / 2-0-2) 3	BSC601 Leadership and Executive Presence (1-0-0)1	BSC603 Introduction to Consulting (1-0-0)1	BSC601 Leadership and Executive Presence (1-0-0)1	BSR601 GP III 1 Credit	10	23	0	0	24	
	Elective 5 (Major) (3-0-0 / 2-0-2) 3	Elective 6 (Major) (3-0-0 / 2-0-2) 3	Elective 7 (Major) (3-0-0 / 2-0-2) 3	Elective 8 (Major) (3-0-0 / 2-0-2) 3	Elective 3 Minor/Open (3-0-0 / 2-0-2) 3	Elective 4 Minor/Open (3-0-0 / 2-0-2) 3	BSC606 Legal Framework of Business (1-0-0)1	BSC602 Introduction to Sustainable Business (1-0-0)1	BSC604 Global Trends in Management (1-0-0)1	BSC602 Introduction to Sustainable Business (1-0-0)1	BSR602 GP IV 1 Credit	10	21	0	0	22	
	Total Credits MBA Program												41				

Note:

BSP508 Python for Data Analysis is a core course for MBA Business Analytics students in Semester 2
MBA students may choose between BSP508 Python for Data Analysis and BSL522 Marketing Research in Semester 2

SCHOOL OF MANAGEMENT & LIBERAL STUDIES

School of Management and Liberal Studies, The NorthCap University, Gurugram offers courses at the undergraduate, postgraduate, and doctoral levels divided into three departments:

Department of Management & Commerce

Following is the list of courses offered at the Postgraduate and Undergraduate levels: -

Undergraduate Level

- BBA – Bachelor of Business Administration
- BBA Specialization in Business Analytics
- BBA Specialization in Digital Marketing
- BBA Specialization in Entrepreneurship and Family Business
- BCOM (Hons.) – Bachelor of Commerce (Honors)
- BCOM (Hons.) – Bachelor of Commerce (Honors) Specialization in Financial markets
- BA (Hons.) Economics – Bachelor of Arts (Honors) Economics

Department of Psychology

Following is the list of courses offered at the Postgraduate and Undergraduate levels: -

Postgraduate Level

- MA-Psychology Undergraduate Level
- BA (Hons.) Psychology – Bachelor of Arts (Honors) Psychology

Centre for Language Learning

Following is the list of courses offered at the Postgraduate and Undergraduate levels: -

Postgraduate Level

- MA-English Undergraduate Level
- BA (Hons.) English- Bachelor of Arts (Honors) English
- BA (JMC) – Bachelor of Arts (Journalism and Mass Communication)

About the Department of Management & Commerce

Department of Management & Commerce falling under School of Management and Liberal Studies at The NorthCap University has a decade-long history of producing competent, capable, and dedicated professionals. Since its inception in the year 2009, it has been steadfastly working for the vision and mission of The NorthCap University, Gurugram. Its journey began in 2007 with the commencement of 2-year full-time MBA Programme, affiliated to Maharishi Dayanand University, Rohtak. Later, it emerged as an individual school that started offering UG and PG degrees such as BBA, B.Com and BA (Hons.) Economics with multiple specialisations. Apart from covering the regular curriculum, there is strong emphasis on the Personality Development Programmes, Student Mentoring, Live Projects, Experiential learning through case studies, industry visits, Industria academia interaction programmes, subject-focused seminars, guest talks, industrial visits, community service, and encouragement for in-house and outside extra-curricular activities to develop students' employability skills and prepare them as professional managers and entrepreneurs. This is an outstanding place for those who want to pursue their career in management and commerce for its well-qualified and experienced faculty, modern facilities, spacious classrooms, multimedia-based learning supportive infrastructure, and placements. Our persistence and passion have earned us recognition across MoE-led NIRF ranking, QS Star ranking, ASU partnership, ARIIA rankings and we are confident about scaling even greater heights. In 2024, our BBA Programme was ranked #1 in the State of Haryana.

B. Com (Hons.) with ACCA

B.Com (Hons.) with ACCA UK at The NorthCap University is a 3-year undergraduate programme designed in collaboration with the Association of Chartered Certified Accountants (ACCA), UK and International Skill Development Corporation (ISDC), UK. The curriculum of ACCA has been fully integrated offering students a unique opportunity to pursue ACCA qualification in tandem with their undergraduate course. ACCA (the Association of Chartered Certified Accountants) is the Global Body for Professional Accountants. ACCA offers business-relevant, first-choice qualifications to individuals with application, ability and ambition around the world who seek a rewarding career in accountancy, finance, and management. Founded in 1904, ACCA has consistently held unique core values: opportunity, diversity, innovation, integrity and accountability. ACCA believes that accountants bring value to economies at all stages of development. The primary goal is to enhance capacity in the profession and encourage the adoption of global standards. ACCA's values are aligned to the needs of employers in all sectors, ensuring professionals through their qualifications, are prepared to meet the growing business needs of the corporate world. ISDC - International Skill Development Corporation is a leading education and skill development organisation with a vision of bridging the global skill gap between academia and industry by developing qualifications on demand. ISDC is a Limited Company, registered under the Companies Act of England with operations across the globe. It imparts a set of Skill Development Activities through its structured plan aiming to develop skills for tomorrow. The operation includes Skill Development Projects, Professional and Vocational Education Activities, International Schools and Colleges, Professional and Corporate Training, Consulting, and Research & Development. ISDC has branches across the country

Bachelor of Business Administration

Overall Credit Structure (BBA) (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category		Credits	
Major (Core)		55	
Ability Enhancement Course (SCE)		10	
Major Project		6	
Skill Enhancement		8	
General Proficiency		6	
Minor Stream		22	
Multidisciplinary		9	
Community Service		6	
Value Added Course		5	
Summer Internship		4	
Total Credits		131	
Programme Core		L-T-P	Credits
BSL109	Fundamentals of Business Environment	3-0-0	3
BSL102	Principles of Management	3-0-0	3
BSL103	Fundamentals of Marketing Management	3-0-0	3
BSL104	Human Resource Management	3-0-0	3
BSL105	Fundamentals of Organizational Behavior	3-0-0	3
BSL201	Operations Management	3-0-0	3
BSL205	Fundamentals of Financial Management	4-0-0	4
BSL211	Business Statistics	3-0-0	3
BSL209	E-Commerce	3-0-0	3
BSL301	Business Policy & Strategy	3-0-0	3
BSL303	International Business	3-0-0	3
BSL304	Investment Management	3-0-0	3
CML101	Professional Accounting	3-0-0	3
CML107	Introduction to Banking	3-0-0	3
BSL208	Business Research Methods	3-0-0	3
CML109	Business Laws	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
BSL313	Project Management	3-0-0	3
Programme Core (4 th year)		L-T-P	Credits
BSL401	Technical Writing	4-0-0	4
BSL403	Advanced-Data Analysis Tools	3-0-2	4
BSL405	AI in Business	3-0-0	3
BSL402	Fintech	3-0-0	3
SMM302	Business Analytics & Data Mining Modelling using R	2-0-2	3

Ability Enhancement		L-T-P	Credits
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2
	Foreign Language Elective	1-2-0	3
General Proficiency			
BSR101	GP-I		1
BSR102	GP-II		1
BSR201	GP-III		1
BSR202	GP-IV		1
BSR301	GP-V		1
BSR302	GP-VI		1
Community Service			
BSS101	Community Service (CS-I)		2
BSS102	Community Service (CS-II)		
BSS201	Community Service (CS-III)		2
BSS202	Community Service (CS-IV)		
BSS301	Community Service (CS-V)		2
BSS302	Community Service (CS-VI)		
Skill Enhancement Courses			
BSL210	Creative thinking and Negotiation	3-0-0	3
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL101	Entrepreneurship	3-0-0	3
Value Added Courses			
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3
Project Presentation & Training			
BSD201	Minor Project	0-0-8	4
BSD302	Major Project	0-0-12	6
BSD403	Dissertation I	0-0-12	6
BSD402	Dissertation II	0-0-16	8
BST301	Summer Internship	0-0-8	4
PROGRAMME ELECTIVES			
Marketing			
BSL331	Customer Relationship Management	3-0-0	3
BSL332	Management of Sales and Distribution	3-0-0	3
BSL333	Marketing & Consumer Analytics	3-0-0	3
BSL334	Fundamentals of Retail Management	3-0-0	3

BSL335	Marketing of Services	3-0-0	3
BSL336	Advertising and Promotion	3-0-0	3
BSL337	Fundamentals of Strategic Marketing	3-0-0	3
BSL338	Marketing in Digital Era	2-0-2	3
BSL381	Product and Brand Management	3-0-0	3
BSL382	Marketing Communication	3-0-0	3
BSL204	Fundamentals of Consumer Behavior	3-0-0	3
HRM			
BSL339	Recruitment and Selection	3-0-0	3
BSL340	Performance and Competency Management	3-0-0	3
BSL341	Employee Training and Development	3-0-0	3
BSL342	Industrial Relations and Indian Labour Laws	3-0-0	3
BSL343	Compensation and Reward Management	3-0-0	3
BSL344	Organization Change and Development	3-0-0	3
BSL345	Cross Culture HRM	3-0-0	3
BSL346	Fundamentals of Strategic HRM	3-0-0	3
BSL390	HR Audit	3-0-0	3
BSL391	Systems Thinking	3-0-0	3
BSL392	Workplace Diversity and Inclusion	3-0-0	3
BSL302	Leadership	3-0-0	3
Finance			
BSL347	Financial Reporting and Analysis	3-0-0	3
BSL348	Introduction to Financial Institutions and Market	3-0-0	3
BSL349	Insurance and Risk Management	3-0-0	3
BSL350	Fundamentals of Money and Banking	3-0-0	3
BSL351	Introduction to Portfolio Management	3-0-0	3
BSL352	Microfinance in India	3-0-0	3
BSL353	Cost and Management Accounting	3-0-0	3
CML355	Project Appraisal & Finance	3-0-0	3
ENL210	Fundamentals of Spreadsheet Modelling	3-0-0	3
CML354	International Finance	3-0-0	3
CML206	Security & Investment Management	3-0-0	3
CML356	Financial Services	3-0-0	3

Multidisciplinary Courses		
Open Elective - I	3-0-0	3
Open Elective - II	3-0-0	3
Open Elective - III	3-0-0	3
Open Elective - IV	3-0-0	3

BBA SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per week L-T-P	Contact Hours per Sem	Credits
1	BSL102 Principles of Management (3-0-0)3	BSL103 Fundamentals of Marketing Management (3-0-0)3	CML101 Professional Accounting (3-0-0)3	BSL109 Fundamentals of Business Environment (3-0-0)3	BSL105 Fundamentals of Organizational Behavior (3-0-0)3	CSV100 Basic Computer Skills for Professionals (0-0-4)2	CLL120 Human Values & Professional Ethics (2-0-0)2	BSS101 CS-I 1 Credit	BSR101 GP-I 1 Credit	17	0	4	21*15= 315	20
2	BSL104 Human Resource Management (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	BSL205 Fundamentals of Financial Management (4-0-0)4	BSL107 Introduction to Managerial Economics (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CLL130 Effective Comm-1 (1-0-2)2	BSS102 CS-II (140 Hrs)* 2 Credit	BSR102 GP-II 1 Credit	17	0	2	19*15= 285	21	
Summers	BST201 Internship I/ Vocational Course# OR BSD201 Minor Project (0-0-8)4											8		4
EXIT WITH UG CERTIFICATE IN BUSINESS ADMINISTRATION														
3	BSL211 Business Statistics (3-0-0)3	BSL201 Operations Management (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL304 Investment Management (3-0-0)3	ENL212 Corporate Governance & Sustainability (3-0-0)3	CLL140 Effective Comm-II (1-0-2)2	BSS201 CS-III 1 credit	BSR201 GP-III 1 credit	19	0	2	21*15= 315	21	
4	BSL208 Business Research Methods (3-0-0)3	BSL209 Ecommerce (3-0-0)3	BSL210 Creative Thinking and Negotiation (3-0-0)3	Foreign Language Elective (1-2-0)3	Open Elective-I (3-0-0)3	Programme Elective -II (3-0-0)3	BSS202 CS-IV (140 Hrs)* 2 Credit	BSR202 GP-IV 1 credit	16	2	0	18*15= 270	21	
Summers	BST301 Summer Internship (0-0-8)4											8		4
EXIT WITH UG DIPLOMA IN BUSINESS ADMINISTRATION														
5	BSL303 International Business (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	Programme Elective-III (3-0-0)3	Programme Elective -IV (3-0-0)3	Open Elective-II (3-0-0)3	BSL313 Project Management (3-0-0)3	BSS301 CS-V 1 credit	BSR301 GP-V 1 credit	18	0	0	18*15= 270	19	
6	BSL101 Entrepreneurship (3-0-0)3	Programme Elective -V (3-0-0)3	Programme Elective -VI (3-0-0)3	Open Elective-III (3-0-0)3	BSD302 Major Project 6 credits		BSS302 CS-VI (140 Hrs) 2 Credit	BSR302 GP-VI 1 credit	12	0	0	12*15= 180	21	
EXIT WITH UG DEGREE IN BUSINESS ADMINISTRATION														131

BBA SCHEME OF STUDY (2024 - 2025)

7	BSL401 Technical Writing (4-0-0)4	BSL403 Advanced- Data Analysis Tools (3-0-2)4	BSL405 AI in Business (3-0-0)3	Program Elective-VII (3-0-0)3	BSD403 Dissertation-I* (0-0-12)6				13	0	2	15*15= 225	20
8	BSL402 Fintech (3-0-0)3	SMM302 Business Analytics & Data Mining Modelling using R (2- 0-2)3	Program Elective-VIII (3-0-0)3	Open Elective IV (3-0-0)3	BSD402 Dissertation-II* (0-0-16)8				11	0	2	13*15= 195	20
TOTAL													171
EXIT WITH UG DEGREE (HONOURS) WITH RESEARCH IN BUSINESS ADMINISTRATION**													

NOTE:

- Students shall utilize the internship period (6-8 weeks) to complete 140 hours of serving the community.
- If the student is not undertaking any research-based project, then the Student has to do MOOC Courses of equivalent credits.
- Student taking exit after one year has to do Internship I/ Vocational Course. Student also complete work based vocational course/internship/project of 4 credits during the summer vacation of the first semester. Student who opts to exit after completion of first year and have earned a minimum of 42 credits at university, will be awarded UG certificate.
- The formation of Year IV class is based on a minimum student strength of 20.
- Students with minimum 75% marks in their UG Degree will be eligible to pursue UG Degree (Honours) with Research.
- All courses will be offered in Full MOOC if there are less than 20 students in the batch.

*/** In case a student wishes to pursue UG Degree 4 years (Honours) in Business Administration, he will have to pursue any 5 courses in Full MOOC in lieu of Dissertation I & II. The list of courses is -

- a. Leadership for India Inc: Practical Concepts and Constructs
- b. Online Communication in the Digital Age
- c. Psychology Of Stress, Health and Well-Being
- d. United Nations Sustainable Development Goals (UN SDGs)
- e. Soft Skills
- f. Innovation in Marketing and Marketing of Innovation

In this case, student will earn 171 credits in total.

Bachelor of Business Administration–Business Analytics (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category			Credits
Major (Core)			55
Ability Enhancement Course (SCE)			10
Major Project			6
Skill Enhancement			8
General Proficiency			6
Minor Stream			22
Multidisciplinary			9
Community Service			6
Value Added Course			5
Summer Internship			4
Total Credits			131
Programme Core			
Code	Name	L-T-P	Credit
BSL102	Principles of Management	3-0-0	3
BSL103	Fundamentals of Marketing Management	3-0-0	3
CML101	Professional Accounting	3-0-0	3
BSL109	Fundamentals Business Environment	3-0-0	3
BSL105	Fundamentals of Organizational Behavior	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
BSL205	Fundamentals of Financial Management	4-0-0	3
BSL104	Human Resource Management	3-0-0	3
BSL201	Operations Management	3-0-0	3
CML107	Introduction to Banking	3-0-0	3
BSL211	Business Statistics	3-0-0	3
CML109	Business Laws	3-0-0	3
BSL208	Business Research Methods	3-0-0	3
BSL209	E-Commerce	3-0-0	3
BSL303	International Business	3-0-0	3
BSL301	Business Policy & Strategy	3-0-0	3
BSL304	Investment Management	3-0-0	3
BSL313	Project Management	3-0-0	3
Ability Enhancement			
Code	Name	L-T-P	Credit
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2

Project Presentation & Training			
Code	Name	L-T-P	Credit
BSD201	Minor Project	0-0-8	4
BST301	Summer Internship	0-0-8	4
BSD302	Major Project	0-0-12	6
Skill Enhancement Courses			
Code	Name	L-T-P	Credit
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL210	Creative thinking and Negotiation	2-0-2	3
BSL101	Entrepreneurship	2-1-0	3
General Proficiency			
Code	Name		Credit
BSR101	GP-I		1
BSR102	GP-II		1
BSR201	GP-III		1
BSR202	GP-IV		1
BSR301	GP-V		1
BSR302	GP-VI		1
Community Service			
Code	Name		Credit
BSS101	Community Service (CS-I)		
BSS102	Community Service (CS-II)		2
BSS201	Community Service (CS-III)		
BSS202	Community Service (CS-IV)		2
BSS301	Community Service (CS-V)		
BSS302	Community Service (CS-VI)		2
Multidisciplinary Courses			
		L-T-P	Credit
	Open Elective - I	3-0-0	3
	Open Elective - II	3-0-0	3
	Open Elective - III	3-0-0	3
Value Added Courses			
		L-T-P	Credit
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3

PROGRAMME ELECTIVES			
Business Analytics			
Code	Programme Electives	L-T-P	Credit
ENL338	Introduction to Statistical Programming using R	2-0-2	3
BSL357	Fundamentals of Econometrics	2-0-2	3
BSL359	Fundamentals of Predictive Modelling	2-0-2	3
BSL363	Financial Analytics	2-0-2	3
BSL306	Fundamentals of Big data analytics	2-0-2	3
BSL307	Fundamentals of data mining	2-0-2	3
BSL308	Data visualization	2-0-2	3

BBA-BUSINESS ANALYTICS SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per week L-T-P	Contact Hours per Sem	C
1	BSL102 Principles of Management (3-0-0)3	BSL103 Fundamentals of Marketing Management (3-0-0)3	CML101 Professional Accounting (3-0-0)3	BSL109 Fundamentals of Business Environment (3-0-0)3	BSL105 Fundamentals of Organizational Behavior (3-0-0)3	CSV100 Basic Computer Skills for Professionals 2 credits (0-0-4)2	CLL120 Human Values & Professional Ethics (2-0-0)2	BSS101 CS-I	BSR101 GP-I 1 Credit	17	0	4	21*15=315	20
2	BSL104 Human Resource Management (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	BSL205 Fundamentals of Financial Management (4-0-0)4	BSL107 Introduction to Managerial Economics (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CLL130 Effective Comm-I (1-0-2)2	BSS102 CS-II (140 Hrs)* 2 Credit	BSR102 GP-II 1 Credit	17	0	2	19*15=285	21	
Summers	BST201 Internship I/ Vocational Course# OR BSD201 Minor Project (0-0-8)4												8	4
EXIT WITH UG CERTIFICATE IN BUSINESS ADMINISTRATION														
3	BSL211 Business Statistics (3-0-0)3	BSL201 Operations Management (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL304 Investment Management (3-0-0)3	ENL212 Corporate Governance & Sustainability (3-0-0)3	CLL140 Effective Comm-II (1-0-2)2	BSS201 CS-III	BSR201 GP-III 1 credit	18	0	4	22*15=330	21	
4	BSL208 Business Research Methods (3-0-0)3	BSL209 Ecommerce (3-0-0)3	BSL210 Creative thinking and Negotiation (3-0-0)3	Foreign Language Elective I (1-2-0)3	Open Elective-I (3-0-0)3	Programme Elective -II (2-0-2)3	BSS202 CS-IV (140 Hrs)* 2 Credit	BSR202 GP-IV 1 credit	15	2	2	19*15=285	21	
Summers	BST301 Summer Internship (0-0-8)4												8	4
EXIT WITH UG DIPLOMA IN BUSINESS ADMINISTRATION														
5	BSL303 International Business (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	Programme Elective-III (2-0-2)3	Programme Elective -IV (2-0-2)3	Open Elective-II (3-0-0)3	BSL313 Project Management (3-0-0)3	BSS301 CS-V	BSR301 GP-V 1 credit	16	0	4	20*15=300	19	
6	BSL101 Entrepreneurship (3-0-0)3	Programme Elective -V (2-0-2)3	Programme Elective -VI (2-0-2)3	Open Elective-III (3-0-0)3	BSD302 Major Project 6 credit		BSS302 CS-VI (140 Hrs)* 2 Credit	BSR302 GP-VI 1 credit	10	0	4	14*15=210	21	
TOTAL													131	

NOTE: -Students shall utilize the internship period (6-8 weeks) to complete 140 hours of serving the community.

-If the student is not undertaking any research-based project, then Student has to do MOOC Courses of equivalent credits.

-Student taking exit after one year has to do Internship I/ Vocational Course. Student also complete work based vocational course/internship/project of 4 credits during the summer vacation of the first semester. Student who opts to exit after completion of first year and have earned a minimum of 42 credits at university, will be awarded UG certificate.

-Students will get Certificate in Business Analytics at the end of 3 years upon completion of the required number of credits and programme electives.

Bachelor of Business Administration-Digital Marketing (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category			Credits
Major (Core)			55
Ability Enhancement Course (SCE)			10
Major Project			6
Skill Enhancement			8
General Proficiency			6
Minor Stream			22
Multidisciplinary			9
Community Service			6
Value Added Course			5
Summer Internship			4
Total Credits			131
Programme Core			
Code	Name	L-T-P	Credit
BSL102	Principles of Management	3-0-0	3
BSL103	Fundamentals of Marketing Management	3-0-0	3
CML101	Professional Accounting	3-0-0	3
BSL109	Fundamentals Business Environment	3-0-0	3
BSL105	Fundamentals of Organizational Behavior	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
BSL205	Fundamentals of Financial Management	4-0-0	3
BSL104	Human Resource Management	3-0-0	3
BSL201	Operations Management	3-0-0	3
CML107	Introduction to Banking	3-0-0	3
BSL211	Business Statistics	3-0-0	3
CML109	Business Laws	3-0-0	3
BSL208	Business Research Methods	3-0-0	3
BSL209	E-Commerce	3-0-0	3
BSL303	International Business	3-0-0	3
BSL301	Business Policy & Strategy	3-0-0	3
BSL304	Investment Management	3-0-0	3
BSL313	Project Management	3-0-0	3
Ability Enhancement			
Code	Name	L-T-P	Credit
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2

Project Presentation & Training			
Code	Name	L-T-P	Credit
BSD201	Minor Project	0-0-8	4
BST301	Summer Internship	0-0-8	4
BSD302	Major Project	0-0-12	6
Skill Enhancement Courses			
Code	Name	L-T-P	Credit
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL210	Creative thinking and Negotiation	2-0-2	3
BSL101	Entrepreneurship	2-1-0	3
General Proficiency			
Code	Name		Credit
BSR101	GP-I		1
BSR102	GP-II		1
BSR201	GP-III		1
BSR202	GP-IV		1
BSR301	GP-V		1
BSR302	GP-VI		1
Community Service			
Code	Name		Credit
BSS101	Community Service (CS-I)		
BSS102	Community Service (CS-II)		2
BSS201	Community Service (CS-III)		
BSS202	Community Service (CS-IV)		2
BSS301	Community Service (CS-V)		
BSS302	Community Service (CS-VI)		2
Multidisciplinary Courses			
		L-T-P	Credit
	Open Elective - I	3-0-0	3
	Open Elective - II	3-0-0	3
	Open Elective - III	3-0-0	3
Value Added Courses			
		L-T-P	Credit
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3

PROGRAMME ELECTIVES			
Digital Marketing			
Code	Programme Electives	L-T-P	Credit
BSL365	Content Development and Marketing	2-0-2	3
BSL367	Digital Analytics and Campaign Planning	2-0-2	3
BSL368	Digital Futures	2-0-2	3
BSL369	Digital Media Planning and Management	2-0-2	3
BSL373	Mobile Marketing	2-0-2	3
BSL309	Digital Media Ethics and Laws	2-0-2	3
BSL311	Web Design & Development	2-0-2	3
BSL362	Social Media and Web Analytics	2-0-2	3

BBA DIGITAL MARKETING SCHEME (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per week L-T-P	Contact Hours per Sem	C
1	BSL102 Principles of Management (3-0-0)3	BSL103 Fundamentals of Marketing Management (3-0-0)3	CML101 Professional Accounting (3-0-0)3	BSL109 Fundamentals of Business Environment (3-0-0)3	BSL105 Fundamentals of Organizational Behavior (3-0-0)3	CSV100 Basic Computer Skills for Professionals 2 credits (0-0-4)2	CLL120 Human Values & Professional Ethics (2-0-0)2	BSS101 CS-I	BSR101 GP-I 1 Credit	17	0	4	21*15=315	20	
2	BSL104 Human Resource Management (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	BSL205 Fundamentals of Financial Management (4-0-0)4	BSL107 Introduction to Managerial Economics (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CLL130 Effective Comm-I (1-0-2)2	BSS102 CS-II (140 Hrs)* 2 Credit	BSR102 GP-II 1 Credit	17	0	2	19*15=285	21		
Summers	BST201 Internship I/ Vocational Course# OR BSD201 Minor Project (0-0-8)4												8	4	
EXIT WITH UG CERTIFICATE IN BUSINESS ADMINISTRATION															
3	BSL211 Business Statistics (3-0-0)3	BSL201 Operations Management (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL304 Investment Management (3-0-0)3	ENL212 Corporate Governance & Sustainability (3-0-0)3	CLL140 Effective Comm-II (1-0-2)2	BSS201 CS-III	BSR201 GP-III 1 credit	18	0	4	22*15=330	21		
4	BSL208 Business Research Methods (3-0-0)3	BSL209 Ecommerce (3-0-0)3	BSL210 Creative thinking and Negotiation (3-0-0)3	Foreign Language Elective I (1-2-0)3	Open Elective-I (3-0-0)3	Programme Elective -II (2-0-2)3	BSS202 CS-IV (140 Hrs)* 2 Credit	BSR202 GP-IV 1 credit	15	2	2	19*15=285	21		
Summers	BST301 Summer Internship (0-0-8)4												8	4	
EXIT WITH UG DIPLOMA IN BUSINESS ADMINISTRATION															
5	BSL303 International Business (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	Programme Elective-III (2-0-2)3	Programme Elective -IV (2-0-2)3	Open Elective-II (3-0-0)3	BSL313 Project Management (3-0-0)3	BSS301 CS-V	BSR301 GP-V 1 credit	16	0	4	20*15=300	19		
6	BSL101 Entrepreneurship (3-0-0)3	Programme Elective -V (2-0-2)3	Programme Elective -VI (2-0-2)3	Open Elective-III (3-0-0)3	BSD302 Major Project 6 credit		BSS302 CS-VI (140 Hrs)* 2 Credit	BSR302 GP-VI 1 credit	10	0	4	14*15=210	21		
TOTAL														131	

NOTE: -Students shall utilize the internship period (6-8 weeks) to complete 140 hours of serving the community.

-If the student is not undertaking any research-based project, then Student has to do MOOC Courses of equivalent credits.

-Student taking exit after one year has to do Internship I/ Vocational Course. Student also complete work based vocational course/internship/project of 4 credits during the summer vacation of the first semester. Student who opts to exit after completion of first year and have earned a minimum of 42 credits at university, will be awarded UG certificate.

- The student will be awarded Specialization Certificate in Digital Marketing at the end of 3 years upon completion of the required number of credits and programme electives.

BBA ENTREPRENEURSHIP AND FAMILY BUSINESS (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category			Credits
Major (Core)			55
Ability Enhancement Course (SCE)			10
Major Project			6
Skill Enhancement			8
General Proficiency			6
Minor Stream			22
Multidisciplinary			9
Community Service			6
Value Added Course			5
Summer Internship			4
Total Credits			131
Programme Core			
Code	Name	L-T-P	Credit
BSL102	Principles of Management	3-0-0	3
BSL103	Fundamentals of Marketing Management	3-0-0	3
CML101	Professional Accounting	3-0-0	3
BSL109	Fundamentals Business Environment	3-0-0	3
BSL105	Fundamentals of Organizational Behavior	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
BSL205	Fundamentals of Financial Management	4-0-0	3
BSL104	Human Resource Management	3-0-0	3
BSL201	Operations Management	3-0-0	3
CML107	Introduction to Banking	3-0-0	3
BSL211	Business Statistics	3-0-0	3
CML109	Business Laws	3-0-0	3
BSL208	Business Research Methods	3-0-0	3
BSL209	E-Commerce	3-0-0	3
BSL303	International Business	3-0-0	3
BSL301	Business Policy & Strategy	3-0-0	3
BSL304	Investment Management	3-0-0	3
BSL313	Project Management	3-0-0	3
Ability Enhancement			
Code	Name	L-T-P	Credit
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2

Project Presentation & Training			
Code	Name	L-T-P	Credit
BSD201	Minor Project	0-0-8	4
BST301	Summer Internship	0-0-8	4
BSD302	Major Project	0-0-12	6
Skill Enhancement Courses			
Code	Name	L-T-P	Credit
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL210	Creative thinking and Negotiation	2-0-2	3
BSL101	Entrepreneurship	2-1-0	3
General Proficiency			
Code	Name		Credit
BSR101	GP-I		1
BSR102	GP-II		1
BSR201	GP-III		1
BSR202	GP-IV		1
BSR301	GP-V		1
BSR302	GP-VI		1
Community Service			
Code	Name		Credit
BSS101	Community Service (CS-I)		
BSS102	Community Service (CS-II)		2
BSS201	Community Service (CS-III)		
BSS202	Community Service (CS-IV)		2
BSS301	Community Service (CS-V)		
BSS302	Community Service (CS-VI)		2
Multidisciplinary Courses			
		L-T-P	Credit
	Open Elective - I	3-0-0	3
	Open Elective - II	3-0-0	3
	Open Elective - III	3-0-0	3
Value Added Courses			
		L-T-P	Credit
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3

PROGRAMME ELECTIVES			
Entrepreneurship & Family Business			
Code	Programme Electives	L-T-P	Credit
BSL376	Fundamentals of Family Business	3-0-0	3
BSL377	Social Entrepreneurship	3-0-0	3
BSL378	Entrepreneurial Marketing	3-0-0	3
BSL379	SME Financing	3-0-0	3
BSL384	Human Resource Management in Family Business	3-0-0	3
BSL385	Formulating Business Plan	3-0-0	3
BSL383	B2B Marketing	3-0-0	3
BSL204	Fundamentals of Consumer Behavior	3-0-0	3
BSL366	Design Thinking and Innovation	3-0-0	3
BSL331	Customer Relationship Management	3-0-0	3

BBA ENTREPRENEURSHIP AND FAMILY BUSINESS SCHEME (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per week L-T-P	Contact Hours per Sem	C
1	BSL102 Principles of Management (3-0-0)3	BSL103 Fundamentals of Marketing Management (3-0-0)3	CML101 Professional Accounting (3-0-0)3	BSL109 Fundamentals of Business Environment (3-0-0)3	BSL105 Fundamentals of Organizational Behavior (3-0-0)3	CSV100 Basic Computer Skills for Professionals 2 credits (0-0-4)2	CLL120 Human Values & Professional Ethics (2-0-0)2	BSS101 CS-I	BSR101 GP-I 1 Credit	17	0	4	21*15=315	20	
2	BSL104 Human Resource Management (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	BSL205 Fundamentals of Financial Management (4-0-0)4	BSL107 Introduction to Managerial Economics (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CLL130 Effective Comm-I (1-0-2)2	BSS102 CS-II (140 Hrs)* 2 Credit	BSR102 GP-II 1 Credit	17	0	2	19*15=285	21		
Summers	BST201 Internship I/ Vocational Course# OR BSD201 Minor Project												8	4	
EXIT WITH UG CERTIFICATE IN BUSINESS ADMINISTRATION															
3	BSL211 Business Statistics (3-0-0)3	BSL201 Operations Management (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL304 Investment Management (3-0-0)3	ENL212 Corporate Governance & Sustainability (3-0-0)3	CLL140 Effective Comm-II (1-0-2)2	BSS201 CS-III	BSR201 GP-III 1 credit	19	0	2	21*15=315	21		
4	BSL208 Business Research Methods (3-0-0)3	BSL209 Ecommerce (3-0-0)3	BSL210 Creative thinking and Negotiation (3-0-0)3	Foreign Language Elective I (1-2-0)3	Open Elective-I (3-0-0)3	Programme Elective -II (3-0-0)3	BSS202 CS-IV (140 Hrs)* 2 Credit	BSR202 GP-IV 1 credit	16	2	0	18*15=270	21		
Summers	BST301 Summer Internship												8	4	
EXIT WITH UG DIPLOMA IN BUSINESS ADMINISTRATION															
5	BSL303 International Business (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	Programme Elective-III (3-0-0)3	Programme Elective -IV (3-0-0)3	Open Elective-II (3-0-0)3	BSL313 Project Management (3-0-0)3	BSS301 CS-V	BSR301 GP-V 1 credit	18	0	0	18*15=270	19		
6	BSL101 Entrepreneurship (3-0-0)3	Programme Elective -V (3-0-0)3	Programme Elective -VI (3-0-0)3	Open Elective-III (3-0-0)3	BSD302 Major Project 6 credit		BSS302 CS-VI (140 Hrs)* 2 Credit	BSR302 GP-VI 1 credit	12	0	0	12*15=180	21		
TOTAL														131	

NOTE: -Students shall utilize the internship period (6-8 weeks) to complete 140 hours of serving the community.

-If the student is not undertaking any research-based project, then Student has to do MOOC Courses of equivalent credits.

-Student taking exit after one year has to do Internship I/ Vocational Course. Student also complete work based vocational course/internship/project of 4 credits during the summer vacation of the first semester. Student who opts to exit after completion of first year and have earned a minimum of 42 credits at university, will be awarded UG certificate.

-The student will be awarded Specialization Certificate in Entrepreneurship and Family Business at the end of 3 years upon completion of the required number of credits and programme electives.

Bachelor of Commerce (Hons.)

Overall Credit Structure

OVERALL CREDIT STRUCTURE			
Category		Credits	
Major (Core)		61	
Ability Enhancement Course (SCE)		10	
Major Project		6	
Skill Enhancement Course (ACE)		8	
GP & CS		12	
Minor Stream (PE +Minor Project)		22	
Multidisciplinary Courses		6	
Value Added Course		5	
Summer Internship		4	
Total Credits		134	
Programme Core		L-T-P	Credits
CML302	Management Accounting	3-0-0	3
BSL102A	Principles of Management	3-0-0	3
ENL104	Business Mathematics	3-0-0	3
BSL207	Introduction to Marketing Management	3-0-0	3
BSL105	Fundamentals of Organizational Behavior	3-0-0	3
CML207	Financial Management	3-0-0	3
CML205	Statistics & Research Methodology	3-0-0	3
CML203	Fundamentals of Auditing	3-0-0	3
BSL209	E-Commerce	3-0-0	3
BSL301	Business Policy & Strategy	3-0-0	3
CML202	Income Tax & Practice	3-0-0	3
CML204	Corporate Accounting	3-0-0	3
CML101A	Professional Accounting	3-0-0	3
CML107	Introduction to Banking	3-0-0	3
BSL203	Human Resource Management	3-0-0	3
CML109	Business Laws	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
CML301	Cost Accounting	3-0-0	3
CML303	Indirect Taxation (GST)	3-0-0	3
CML304	Micro Finance	3-0-0	3
ACCA Electives		L-T-P	Credits
CML357	Strategic Business Leader	3-0-0	3
CML358	Strategic Business Reporting	3-0-0	4
CML359	Advanced Financial Management	3-0-0	3
CML361	Advanced Audit and Assurance	3-0-0	3

Minor Stream		L-T-P	Credits
Programme Electives - I, II, III, IV, V, VI(06)		3-0-0	18
CMD201 Minor Project (for BCom (Hons.))		0-0-8	4
Ability Enhancement		L-T-P	Credits
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2
	Foreign Language Elective	1-2-0	3
General Proficiency			
CMR101	GP-I		1
CMR102	GP-II		1
CMR201	GP-III		1
CMR202	GP-IV		1
CMR301	GP-V		1
CMR302	GP-VI		1
Community Service			
CMS101	Community Service (CS-I)		2
CMS102	Community Service (CS-II)		
CMS201	Community Service (CS-III)		2
CMS202	Community Service (CS-IV)		
CMS301	Community Service (CS-V)		2
CMS302	Community Service (CS-VI)		
Skill Enhancement Courses			
BSL210	Creative thinking and Negotiation	3-0-0	3
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL101	Entrepreneurship	3-0-0	3
Value Added Courses			
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3
Project Presentation & Training			
CMT301	Summer Internship (for BCom (Hons.))	0-0-8	4
CMD302	Major Project (for BCom (Hons.))	0-0-12	6
PROGRAMME ELECTIVES			
Marketing			
BSL331	Customer Relationship Management	3-0-0	3
BSL332	Management of Sales and Distribution	3-0-0	3
BSL333	Marketing & Consumer Analytics	3-0-0	3
BSL334	Fundamentals of Retail Management	3-0-0	3

BSL335	Marketing of Services	3-0-0	3
BSL336	Advertising and Promotion	3-0-0	3
BSL337	Fundamentals of Strategic Marketing	3-0-0	3
BSL338	Marketing in Digital Era	3-0-0	3
BSL381	Product and Brand Management	3-0-0	3
BSL382	Marketing Communication	3-0-0	3
BSL204	Fundamentals of Consumer Behavior	3-0-0	3

HRM

Code	Name	L-T-P	Credit
BSL339	Recruitment and Selection	3-0-0	3
BSL340	Performance and Competency Management	3-0-0	3
BSL341	Employee Training and Development	3-0-0	3
BSL342	Industrial Relations and Indian Labour Laws	3-0-0	3
BSL343	Compensation and Reward Management	3-0-0	3
BSL344	Organization Change and Development	3-0-0	3
BSL345	Cross Culture HRM	3-0-0	3
BSL346	Fundamentals of Strategic HRM	3-0-0	3
BSL390	HR Audit	3-0-0	3
BSL302	Leadership	3-0-0	
BSL392	Workplace Diversity and Inclusion	3-0-0	3

Finance

Code	Name	L-T-P	Credit
BSL347	Financial Reporting and Analysis	3-0-0	3
BSL348	Introduction to Financial Institutions and Market	3-0-0	3
BSL349	Insurance and Risk Management	3-0-0	3
BSL350	Fundamentals of Money and Banking	3-0-0	3
BSL351	Introduction to Portfolio Management	3-0-0	3
CML352	Financial Econometrics	2-0-2	3
ENL210	Fundamentals of Spreadsheet Modelling	2-0-2	3
CML353	Corporate Restructuring, Mergers & Acquisitions	3-0-0	3
CML354	International Finance	3-0-0	3
CML355	Project Appraisal & Finance	3-0-0	3
CML206	Security & Investment Management	3-0-0	3
CML356	Financial Services	3-0-0	3

Multidisciplinary Courses

Multidisciplinary Courses	L-T-P	Credit
Open Elective - I	2-0-2	3
Open Elective - II	2-0-2	3

B.COM(Hons.)- SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name(L-T-P) Credits										Community Service	GP	Hrs. Per week			Contact Hrs. per Semester	Credits
	L	T	P	L	T	P	L	T	P								
1	CHL100 Environmental Studies (3-0-0)3	BSL 102A Principles of Management (3-0-0)3	CML109 Business Laws (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	CML101A Professional Accounting (3-0-0)3	BSL107 Introduction to Managerial Economics (3-0-0)3	CMS101 CS-I	CMR101 GP-I 1 Credit	18	0	0	18*15=270	18+1=19				
2	CLL130 Effective Comm- I (1-0-2)2	CML302 Management Accounting (3-0-0)3	ENL104 Business Mathematics (3-0-0)3	CLL120 Human Values & Professional Ethics (2-0-0)2	CSV100 Computer Skills for Business (0-0-4)2	BSL207 Intro to Marketing Management (3-0-0)3	CMS102 CS-II (140 HRS) 2 Credit	CMR102 GP-II 1 Credit	15	0	6	21*15=315	18+3=21				
Summers	CMD201										Minor Project (0-0-8) 4			4			
3	CLL140 Effective Comm-II (1-0-2)2	CML207 Financial Management (4-0-0)4	CML205 Statistics & Research Methodology (3-0-0)3	CML203 Fundamentals of Auditing (3-0-0)3	BSL209 E-commerce (3-0-0)3	Programme Elective I (3-0-0)3	CMS201 CS-III	CMR201 GP-III 1 Credit	17	0	2	19*15=330	18+1=19				
4	CML202 Income Tax & Practice (3-0-0)3	CML204 Corporate Accounting (3-0-0)3	ENL 212 Corporate Governance & Sustainability (3-0-0)3	BSL203 HRM (3-0-0)3	Foreign Language Elective (1-2-0)3	Programme Elective II (3-0-0)3	CMS202 CS-IV (140 HRS) 2 Credit	CMR202 GP-IV 1 Credit	16	2	0	18*15=270	18+3=21				
Summers	CMT301										Summer Internship (0-0-8) 4			4			
5	CML301 Cost Accounting (3-0-0)3	CML303 Indirect Taxation (GST) (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	BSL210 Creative Thinking & Negotiation (3-0-0)3	Programme Elective III (3-0-0)3	Programme Elective IV (3-0-0)3 (MOOC)	CMS301 CS-V	CMR301 GP-V 1 Credit	20	0	2	22*15=330	21+1=22				
6	BSL101 Entrepreneurship (3-0-0)3 (MOOC)	CML304 Micro Finance (3-0-0)3	Programme Elective V (3-0-0)3	Programme Elective VI (3-0-0)3	Open Elective II (2-0-2) 3 (MOOC)	CMD302 Major Project (0-0-12)6	CMS302 CS-VI (140 HRS) 2 Credit	CMR302 GP-VI 1 Credit	14	0	2	16*15=240	21+3=24				
TOTAL													134				
EXIT WITH UG DEGREE IN COMMERCE																	

* Students shall complete the required 140 community service hours across the year

Bachelor of Commerce (Hons.) - Financial Markets

Overall Credit Structure (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category		Credits	
Major (Core)		61	
Ability Enhancement Course (SCE)		10	
Major Project		6	
Skill Enhancement Course (ACE)		8	
GP & CS		12	
Minor Stream (PE +Minor Project)		22	
Multidisciplinary Courses		6	
Value Added Course		5	
Summer Internship		4	
Total Credits		134	
Programme Core		L-T-P	Credits
BSL103	Marketing Management	2-1-0	3
BSL102A	Principles of Management	2-1-0	3
ENL104	Business Mathematics	2-0-2	33
CML302	Management Accounting	2-0-2	
BSL105	Fundamentals of Organizational Behavior	2-1-0	3
CML207	Financial Management	3-1-0	4
CML205	Statistics & Research Methodology	2-0-2	3
CML203	Fundamentals of Auditing	2-0-2	3
BSL209	E-Commerce	2-1-0	3
BSL301	Business Policy & Strategy	2-1-0	3
CML202	Income Tax & Practice	2-0-2	3
CML204	Corporate Accounting	2-0-2	3
CML101A	Professional Accounting	2-0-2	3
CML107	Introduction to Banking	2-1-0	3
BSL203	Human Resource Management	2-1-0	3
CML109	Business Laws	3-0-0	3
BSL107	Introduction to Managerial Economics	3-0-0	3
CML301	Cost Accounting	2-0-2	3
CML303	Indirect Taxation (GST)	2-0-2	3
CML304	Micro Finance	2-1-0	3
Minor Stream		L-T-P	Credits
Programme Electives - I, II, III, IV, V, VI(06)		2-0-2	18
CMD201 Minor Project (for BCom (Hons.))		0-0-8	4
Ability Enhancement		L-T-P	Credits
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2
	Foreign Language Elective	1-2-0	3

General Proficiency			
CMR101	GP-I		1
CMR102	GP-II		1
CMR201	GP-III		1
CMR202	GP-IV		1
CMR301	GP-V		1
CMR302	GP-VI		1
Community Service			
CMS101	Community Service (CS-I)		2
CMS102	Community Service (CS-II)		
CMS201	Community Service (CS-III)		2
CMS202	Community Service (CS-IV)		
CMS301	Community Service (CS-V)		2
CMS302	Community Service (CS-VI)		
Skill Enhancement Courses			
BSL210	Creative thinking and Negotiation	3-0-0	3
CSV100	Basic Computer Skills for Professionals	0-0-4	2
BSL101	Entrepreneurship	3-0-0	3
Value Added Courses			
CLL120	Human Values & Professional Ethics	2-0-0	2
ENL212	Corporate Governance and Sustainability	3-0-0	3
Multidisciplinary Courses		L-T-P	Credit
Open Elective - I		2-0-2	3
Open Elective - II		2-0-2	3
Project Presentation & Training			
CMT301	Summer Internship	0-0-8	4
CMD302	Major Project	0-0-12	6
PROGRAMME ELECTIVES			
Financial Markets			
BSL351	Introduction to Portfolio Management	2-0-2	3
CML206	Security & Investment Management	2-0-2	3
CML305	Securities Operations and Risk Management	2-0-2	3
CML306	Mutual Fund Distributors	2-0-2	3
CML307	Fundamental & Technical Analysis	2-0-2	3
CML308	Equity Derivatives	2-0-2	3
CML309	Behavioral Finance	2-0-2	3

B.COM(Hons.)- FINANCIAL MARKETS SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name(L-T-P) Credits										GP	Hrs. Per week L- T- P	Contact Hrs. per Semester	Credits	
	Community Service	BSL107 Introduction to Managerial Economics (3-0-0)3	CML101A Professional Accounting (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL 102A Principles of Management (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CML302 Management Accounting (3-0-0)3	ENL104 Business Mathematics (3-0-0)3	CLL120 Human Values & Professional Ethics (2-0-0)2					CSV100 Computer Skills for Business (0-0-4)2
1	CMS101 CS-I	BSL107 Introduction to Managerial Economics (3-0-0)3	CML101A Professional Accounting (3-0-0)3	CML107 Introduction to Banking (3-0-0)3	CML109 Business Laws (3-0-0)3	BSL 102A Principles of Management (3-0-0)3	CHL100 Environmental Studies (3-0-0)3	CML302 Management Accounting (3-0-0)3	ENL104 Business Mathematics (3-0-0)3	CLL120 Human Values & Professional Ethics (2-0-0)2	CSV100 Computer Skills for Business (0-0-4)2	CMR101 GP-I 1 Credit	18 0 0	18*15=270	18+1=19
2	GMS102 CS-II (140 HRS) 2 Credit	BSL207 Intro to Marketing Management (3-0-0)3	GSV100 Computer Skills for Business (0-0-4)2	CLL120 Human Values & Professional Ethics (2-0-0)2	ENL104 Business Mathematics (3-0-0)3	CML302 Management Accounting (3-0-0)3	CLL130 Effective Comm- I (1-0-2)2	CML302 Management Accounting (3-0-0)3	ENL104 Business Mathematics (3-0-0)3	CLL120 Human Values & Professional Ethics (2-0-0)2	BSL105 Fundamentals of Organizational Behaviour (3-0-0)3	CMR102 GP-II 1 Credit	15 0 6	21*15=315	18+3=21
Summers	Minor Project (0-0-8) 4														4
3	GMS201 CS-III	BSL209 Programme Elective I (3-0-0)3	BSL209 E-commerce (3-0-0)3	CML203 Fundamentals of Auditing (3-0-0)3	CML205 Statistics & Research Methodology (3-0-0)3	CML207 Financial Management (4-0-0)4	CLL140 Effective Comm-II (1-0-2)2	CML207 Financial Management (4-0-0)4	CML205 Statistics & Research Methodology (3-0-0)3	CML203 Fundamentals of Auditing (3-0-0)3	Programme Elective I (3-0-0)3	CMR201 GP-III 1 Credit	17 0 2	19*15=330	18+1=19
4	GMS202 CS-IV (140 HRS) 2 Credit	BSL203 HRM (3-0-0)3	BSL203 HRM (3-0-0)3	Foreign Language Elective (1-2-0)3	ENL 212 Corporate Governance & Sustainability (3-0-0)3	CML204 Corporate Accounting (3-0-0)3	CML202 Income Tax & Practice (3-0-0)3	CML204 Corporate Accounting (3-0-0)3	ENL 212 Corporate Governance & Sustainability (3-0-0)3	Programme Elective II (3-0-0)3	Programme Elective II (3-0-0)3	CMR202 GP-IV 1 Credit	16 2 0	18*15=270	18+3=21
Summers	Summer Internship (0-0-8) 4														4
5	CMS301 CS-V	Programme Elective IV (3-0-0)3 (MOOC)	Programme Elective III (3-0-0)3	BSL210 Creative Thinking & Negotiation (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	CML303 Indirect Taxation (GST) (3-0-0)3	CML301 Cost Accounting (3-0-0)3	CML303 Indirect Taxation (GST) (3-0-0)3	BSL301 Business Policy & Strategy (3-0-0)3	BSL210 Creative Thinking & Negotiation (3-0-0)3	Open Elective I (2-0-2) 3 (MOOC)	CMR301 GP-V 1 Credit	20 0 2	22*15=330	21+1=22
6	CMS302 CS-VI (140 HRS) 2 Credit	CMD302 Major Project (0-0-12)6	Open Elective II (2-0-2) 3 (MOOC)	Programme Elective VI (3-0-0)3	Programme Elective V (3-0-0)3	CML304 Micro Finance (3-0-0)3	BSL101 Entrepreneurship (3-0-0)3 (MOOC)	CML304 Micro Finance (3-0-0)3	Programme Elective V (3-0-0)3	Programme Elective VI (3-0-0)3	CMD302 Major Project (0-0-12)6	CMR302 GP-VI 1 Credit	14 0 2	16*15=240	21+3=24
TOTAL															134
EXIT WITH UG DEGREE IN COMMERCE															

* Students shall complete the required 140 community service hours across the year

Bachelor Of Arts (Hons) Economics

Overall Credit Structure (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category			Credit
Programme Core			66
Ability Enhancement			12
Project Presentation & Training			14
Skill Enhancement			5
General Proficiency			6
Community Service			6
Programme Electives			18
Open Electives			9
Total Credits			136
Code	Name	L-T-P	Credit
BSL102	Principles of Management	3-0-0	3
ENL102N	Principles of Economics	4-0-0	4
ENL103	History of Economic Thoughts	4-0-0	3
ENL104	Business Mathematics	3-0-0	3
ENL106	Intermediate Microeconomics	4-0-0	3
ENL202	International Trade	4-0-0	4
ENL101	Statistics and Research Methodology-I	3-0-0	3
ENL204	Statistics and Research Methodology-II	3-0-0	3
ENL206	Introduction to Econometrics	3-0-0	3
ENL216	Intermediate Macroeconomics	4-0-0	4
ENL208	Environmental Economics	3-0-0	3
ENL209	Behavioral Economics	3-0-0	3
ENL210	Fundamentals of Spreadsheet Modelling	2-0-2	3
ENL212	Corporate Governance & Sustainability	3-0-0	3
ENL213	Mathematical Economics	3-0-0	3
ENL304	Indian Economy	4-0-0	4
ENL306	Economics of Growth & Development	3-0-0	3
ENL337	Financial Economics	2-0-2	3
ENL342	Advanced Econometrics	2-0-2	3
General Proficiency			
Code	Name	L-T-P	Credit
ENR101	GP-I		1
ENR102	GP-II		1
ENR201	GP-III		1
ENR202	GP-IV		1
ENR301	GP-V		1
ENR302	GP-VI		1

Community Service			
Code	Name	L-T-P	Credit
Community Service (CS-I)			
Community Service (CS-II)			2
Community Service (CS-III)			
Community Service (CS-IV)			2
Community Service (CS-V)			
Community Service (CS-VI)			2
Skill Enhancement Courses			
Code	Name	L-T-P	Credit
CSV100	Basic Computer skills for Professionals	0-0-4	2
BSV210	Creative Thinking & Negotiation	3-0-0	3
BSL101	Entrepreneurship	3-0-0	3
Ability Enhancement			
Code	Name	L-T-P	Credit
CHL100	Environmental Studies	3-0-0	3
CLL130	Effective Communication-I	1-0-2	2
CLL140	Effective Communication-II	1-0-2	2
CLL120	Human Values & Professional Ethics	2-0-0	2
Foreign Language Elective - I		1-2-0	3
PROJECT PRESENTATION & TRAINING			
Code	Name	L-T-P	Credit
END201	Minor Project	0-0-8	4
END301	Summer Internship	0-0-8	4
END302	Major Project	0-0-12	6
Programme Electives			
Code	Name	L-T-P	Credit
ENL211	Fundamentals of Money & Banking	3-0-0	3
ENL331	Industrial Economics	3-0-0	3
ENL332	Comparative Economic Development	3-0-0	3
ENL338	Introduction to Statistical Programming with R	2-0-2	3
ENL334	Economics of Health & Education	3-0-0	3
ENL215	Public Finance	3-0-0	3
ENL341	Global economic monetary system	3-0-0	3
BSL308	Fundamentals of Data Visualization	2-0-2	3

BA (Hons.) ECONOMICS SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per week L - T - P	Credits	
1	ENL103 History of Economic Thoughts (4-0-0)4	ENL101 Statistics & Research Methodology-I (3-0-0)3	ENL102N Principles of Economics (4-0-0)4	BSL102 Principles of Management (3-0-0)3	CSV100 Basic Computer skills for Professionals (0-0-4)2	CHL100 Environmental Studies (3-0-0)3	ENS101 CS-I	ENR101 GP-I 1 Credit	13	2	8	19+1=20			
2	BSL101 Entrepreneurship (3-0-0)3	ENL104 Business Mathematics (3-0-0)3	ENL106 Intermediate Microeconomics (4-0-0)4	CLL120 Human Values & Professional Ethics (2-0-0)2	BSV210 Creative Thinking & Negotiation (3-0-0)3	CLL 130 Effective Comm I (1-0-2) 2	ENS102 CS-II (140 Hrs) * 2 Credit	ENR102 GP-II 1 Credit	12	1	8	17+3=20			
Summers	END201 Minor Project (0-0-8)4 Student also complete work based vocational course/ project of 4 credits during the summer vacation of the first semester. Student who opt to exist after completion of first year and have earned a minimum of 44 credits at university, will be awarded UG certificate.											0	0	8	4
	TOTAL														40+4
3	ENL209 Behavioral Economics (3-0-0)3	ENL216 Intermediate Macroeconomics (4-0-0)4	ENL213 Mathematical Economics (3-0-0)3	Programme Elective -I (3-0-0)3	CLL 140 Effective Comm II (1-0-2) 2	Open Elective 1 (2-0-2)3	ENS201 CS-II	ENR201 GP-III 1 Credit	14	2	6	18+1=19			
4	ENL204 Statistics and Research Methodology-II (3-0-0)3	ENL208 Environmental Economics (3-0-0)3	ENL210 Fundamentals of Spread Sheet Modelling (2-0-2)3	ENL212 Corporate Governance & Sustainability (3-0-0)3	Programme Elective -II (3-0-0)3	Open Elective 2 (2-0-2)3	ENS202 CS-IV (140 Hrs) * 2 Credit	ENR202 GP-IV 1 Credit	14	2	10	21+3=24			
Summers	ENT301 Summer Internship (0-0-8) 4 Student also complete work based internship of 4 credits during the summer vacation of the first semester. Student who opt to exist after completion of second year and have earned a minimum of 91 credits at university, will be awarded UG Diploma.											0	0	8	4
	TOTAL														87+4
5	ENL206 Introduction to Econometrics (3-0-0)3	ENL304 Indian Economy (4-0-0)4 Blended MOOC	ENL337 Financial Economics (3-0-0)3	Programme Elective-III (3-0-0)3	Programme Elective-IV (3-0-0)3	Open Elective 3 (3-0-0)3	ENS301 CS-V	ENR301 GP-V 1 Credit	13	1	10	19+1=20			
6	ENL202 International Trade (4-0-0)4	ENL306 Economics of Growth & Development (3-0-0)3 Blended MOOC	ENL342 Advanced Econometrics (3-0-0)3	END302 Major Project (0-0-12)6	Programme Elective-III (2-0-2)3	Programme Elective -IV (2-0-2)3	ENS302 CS-VI (140 Hrs) * 2 Credit	ENR302 GP-VI 1 Credit	14	1	20	22+3=25			
	TOTAL														Total Credit = 136

* Students shall complete the required 140 community service hours across the year

DEPARTMENT OF PSYCHOLOGY

The Department of Psychology at The NorthCap University was established under the School of Management and Liberal Studies (SOM & LS) in 2019 with the vision of nurturing a deep understanding of human behaviours, thought processes and emotions. Since its inception, the department has been dedicated to providing high quality education and conducting cutting-edge research in the field of Psychology. The Department of Psychology offers rigorous academic programmes that equip students with a comprehensive understanding of psychological theories, research methods and practical applications. The department aims to foster professional competence, intellectual maturity, personal and professional growth of the students along with the nurturing ethical standards of practice. To achieve the above goals, a mix of teaching techniques and pedagogical practices is used by the in-house experts. This involves both classroom lectures and experiential learning through fieldwork. The pedagogy is inclusive of lab practicals, simulations, case methods, summer internships, observation days, group discussions and presentations.

Programmes offered:

- BA (Hons) in Psychology
- MA in Clinical Psychology/ Organizational Behavior/ Applied Psychology

The BA (Hons.) Psychology course from The NorthCap University provides students with a broad understanding of the scientific study of human behaviours and psychological processes. It typically covers foundational topics such as cognitive psychology, social psychology, developmental psychology, abnormal psychology, and psychological research methods. Throughout the course of study, students learn about key psychological theories, research findings, and methodologies, as well as how to think critically and understand human diversity and cultural influences. They also have the opportunity to gain hands-on experience through laboratory work, internships, and research projects. A Bachelor's degree in Psychology prepares students for further education or entry-level positions in a variety of fields, including mental health services, social services, education, human resources, research, marketing, and others. It lays a solid foundation for those considering further education in Psychology or related disciplines.

A Master's programme in Psychology is a graduate-level academic programme that aims to provide advanced training in various domains of Psychology. It usually offers specialized coursework and research opportunities in clinical psychology, counselling psychology, cognitive psychology, developmental psychology, social psychology, and others.

The curriculum includes advanced courses in psychological theory, research methods, statistics, and the practical application of psychological principles. Depending on the programme's focus, students can additionally engage in clinical practicums, internships, and thesis projects to gain experiential learning and enhance their knowledge of the field.

MA Clinical Psychology: Our University's MA in Clinical Psychology programme provides comprehensive training in the theories, methods of assessment, and therapeutic techniques essential to the practice of clinical psychology. Students learn how to work effectively with diverse populations in various mental health settings through a combination of intensive coursework, supervised clinical practicum experiences, and research opportunities. The programme focuses on ethical and culturally sensitive approaches to diagnosis and treatment, preparing graduates for licensure as clinical psychologists or further doctoral studies.

MA in Applied Psychology: An Applied Psychology programme in Psychology focuses on the practical application of psychological principles, theories, and research findings to address real-world issues and improve people's lives. These settings may include health, sports, community, forensics, conflict resolution etc.

MA in Organisational Behaviour: The Organizational Behaviour programme provides a comprehensive study of human behaviour in organisational settings, with a focus on topics like leadership, motivation, group dynamics, and organisational culture. The programme focuses on evidence-based approaches to organisational change, decision-making, and strategic management, preparing graduates for careers in human resources, organisational development, consulting, and leadership across a wide range of industries.

Department of Psychology- BA (Hons.) Psychology (2024 - 2025)

OVERALL CREDIT STRUCTURE			
Category		Credits	
Programme Core		60	
Ability Enhancement		14	
Project Presentation & Training		18	
Skill Enhancement		12	
General Proficiency		6	
Programme Electives		15	
Open Electives		12	
Community Service		6	
Total Credits		143	
Programme Core			
Code	Name	L-T-P	Credit
PCL130N	Introduction to Psychology	3-1-0	4
PCL105	Evolution of Psychological Thought	3-1-0	4
PCL113	Methods of Psychological Enquiry	3-1-0	4
PCL114	Statistical Methods	3-1-0	4
PCL104	Introduction to Social Psychology	3-1-0	4
PCL215	Qualitative Methods in Psychology	3-1-0	4
PCL108	Introduction to Physiological Psychology	3-1-0	4
PCL304	Youth, Gender and Identity	3-1-0	4
PCL305	Community Psychology	3-1-0	4
PCL211	Introduction to Developmental Psychology	3-1-0	4
PCL306	Contemporary Psychological Perspectives	3-1-0	4
PCL212	Introduction to Cognitive Psychology	3-1-0	4
PCL214	Psychopathology and Well-Being	3-1-0	4
PCL202	Industrial and Organizational Psychology	3-1-0	4
PCL206	Counselling Psychology	3-1-0	4
Ability Enhancement			
Code	Name	L-T-P	Credit
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values & Professional Ethics	2-0-0	2
CLL130	Effective Communication I	1-0-2	2
CLL140	Effective Communication II	1-0-2	2
Foreign Language Elective		1-2-0	3

General Proficiency			
Code	Name	L-T-P	Credit
PCR101	GP-I		1
PCR102	GP-II		1
PCR201	GP-III		1
PCR202	GP-IV		1
PCR301	GP-V		1
PCR302	GP-VI		1
Community Service			
Code	Name	L-T-P	Credit
PCS101	Community Service (CS-I)		2
PCS102	Community Service (CS-II)		
PCS201	Community Service (CS-III)		2
PCS202	Community Service (CS-IV)		
PCS301	Community Service (CS-V)		2
PCS302	Community Service (CS-VI)		
Skill Enhancement Courses			
Code	Name	L-T-P	Credit
PCP101	Theory and Practice of Measurement-I	0-0-4	2
PCP102	Theory and Practice of Measurement-II	0-0-4	2
PCP203	Theory and Practice of Measurement-III	0-0-4	2
PCP204	Theory and Practice of Measurement-IV	0-0-4	2
PCP303	Theory and Practice of Measurement-V	0-0-4	2
CSV100	Basic Computer Skills for Professionals	0-0-4	2
Other Courses			
Open Elective - I		2-0-2	3
Open Elective - II		2-0-2	3
Open Elective - III		2-0-2	3
Open Elective - IV (Full MOOC)		2-0-2	3
Project Presentation & Training			
Code	Name	L-T-P	Credit
PCT201	Summer Internship-I	0-0-8	4
PCD201	Minor Project	0-0-8	4
PCD302	Major Project	0-0-12	6
PCT301	Summer Internship-II	0-0-8	4

Programme Electives			
Code	Name	L-T-P	Credit
PCL111.	Understanding Individual Differences	3-0-0	3
PCL201	Cultural Psychology	3-0-0	3
PCL131	Health and Well-being Psychology	3-0-0	3
PCL231	Art and Colour Therapy	2-1-0	3
PCL233	Disability Studies	3-0-0	3
PCL333	Therapeutic Interventions	2-1-0	3
BSL102	Principles of Management	3-0-0	3
BSL204	Consumer Behavior	3-0-0	3
PCL336	Advertising and Media Psychology	3-0-0	3
BSL203	Human Resource Management	3-0-0	3
PCL133	Introduction to Organizational Processes	3-0-0	3
PCL334	Sustainability and Conservation Behavior	3-0-0	3
PCL106	Positive Psychology	3-0-0	3
PCL310	Self in The New World	3-0-0	3
PCL337	Stress Management, Coping and Life Adjustment	3-0-0	3
PCL210	Adapting and Thriving through Emotional Intelligence	3-0-0	3
PCL102	Psychology for Living	3-0-0	3

B.A. (Hons.) PSYCHOLOGY SCHEME OF STUDY (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service	GP	Hrs. Per week L - T - P	Contact Hours per Sem	Credits	
1	CLL120 Human Values & Professional Ethics (2-0-0)2	PCL130N Introduction to Psychology (3-1-0)4	PCL104 Introduction to Social Psychology (3-1-0)4	PCPI01 Theory and Practice of Measurement (I) (0-0-4)2	PCL113 Methods of Psychological Enquiry (3-1-0)4	Programme Elective - I (3-0-0)3	CHLI00 Environmental Studies (3-0-0)3	PCS101 CS-I	PCR101 GP-I 1 Credit	17	3	4	24*15= 360	23		
2	CLL130 Effective Comm-I (1-0-2)2	PCL105 Evolution of Psychological Thought (3-1-0)4	PCL114 Statistical Methods (3-1-0)4	PCPI02 Theory and Practice of Measurement (II) (0-0-4)2	Open Elective - I (2-0-2)3	CSV100 Basic Computer Skills for Professionals (0-0-4)2		PCS102 CS-II (140 Hrs)* 2 Credit	PCR102 GP-II 1 Credit	9	2	12	23*15= 375	20		
Summers	PCT201 Summer Internship										(0-0-8)4		8		4	
EXIT POINT: Certificate in Psychology on completion of 47 credits																
3	CLL140 Effective Comm-II (1-0-2)2	PCL122 Introduction to Cognitive Psychology (3-1-0)4	PCL108 Introduction to Physiological Psychology (3-1-0)4	Programme Elective - II (3-0-0)3	PCL125 Qualitative Methods in Psychology (3-1-0)4	PCP203 Theory and Practice of Measurement (II) (0-0-4)2	PCL217 Creative Thinking and Academic Writing (1-0-2)2	PCS201 CS-III	PCR201 GP-III 1 credit	14	3	8	25*15= 375	22		
4	PCL202 Industrial and Organizational Behaviour (3-1-0)4	PCL214 Introduction to Abnormal Psychology (3-1-0)4	PCL211 Introduction to Developmental Psychology (3-1-0)4	Open Elective - II (2-0-2)3	PCP204 Theory and Practice of Measurement (IV) (0-0-4)2	PCD201 Minor Project (0-0-8)4	Foreign Language Elective (1-2-0)3	PCS202 CS-IV (140 Hrs)* 2 Credit	PCR202 GP-IV 1 credit	12	5	6	23*15= 345	27		
Summers	PCT301 Summer Internship										(0-0-8)4		8		4	
EXIT POINT: Diploma in Psychology on completion of 98 credits																
5	PCL305 Community Psychology (3-1-0)4	PCL206 Counselling Psychology (3-1-0)4	Programme Elective-III (3-0-0)3	Programme Elective-IV (3-0-0)3	Open Elective-III (2-0-2)3	PCP303 Theory and Practice of Measurement (V) (0-0-4)2		PCS301 CS-V	PCR301 GP-V 1 credit	14	2	6	22*15= 330	20		
6	PCL304 Youth, Gender and Identity (3-1-0)4	PCL306 Contemporary Psychological Perspectives (3-1-0)4	Programme Elective-V (3-0-0)3	Open Elective-IV FULL MOOC (2-0-2)3	PCD302 Major Project (0-0-12)6			PCS302 GP-VI 1 credit	PCR302	11	2	2	15*15= 225	23		
TOTAL																
										77	17	38	132*15= 1980	143		

EXIT POINT: B.A. (Hons.) Psychology after three years on completion of 143 credits

NOTE: i. The student has the option to exit after year 1 with a Certificate in Psychology on completion of 47 credits (inclusive of 5 credits of Summer Internship)

ii. The student has the option to exit after year 2 with a Diploma in Psychology on completion of 98 credits (inclusive of 5 credits for Summer Internship)

iii. The student will have a degree in B.A. (Hons.) Psychology after three years on completion of 143 credits

* Students shall complete the required 140 Community Service Hours across the year

*The student will be allotted a faculty mentor for a Research project in 6th semester

Department of Psychology- MA Psychology

(Clinical / Organizational / Applied) (2024 - 2025)

Category	PC	Project Presentation & Training	Skill Enhancement	PE	OE	CS	Total
Credits	32	18	4	18	9	4	85

Programme Core			
Code	Name	L-T-P	Credit
PCL509	Paradigms in Psychology	3-1-0	4
PCL513	Advanced Research Methodology	3-1-0	4
PCL511	Behavioral Science and People Analytics	3-1-0	4
PCL512	Culture and Psychology	3-1-0	4
PCL603	Indian Knowledge Systems	3-1-0	4
PCL514	Workplace Communication	3-1-0	4
PCL605	AI and Human Behaviour	3-1-0	4
PCL604	Cognitive Neuroscience	3-1-0	4

Clinical Psychology	
PCL531	Human Growth and Development
PCL532	Psychopathology
PCL533	Psychological Disorders in Contemporary World
PCL534	Psychodiagnostics
PCL631	Clinical Psychology and Psychotherapies
PCL632	Community Rehabilitation
PCL633	Principles and Approaches of Counselling
PCL634	Expressive Therapeutic Approaches
PCL635	Skills and Professional Ethics in Clinical Practice

Organizational Behaviour	
PCL535	Organizational Psychology: Know your Employees
PCL536	HR practices at Workplace
PCL537	Industrial Psychology and Employee Relations
PCL538	New Age Leadership
PCL636	Diversity, Inclusion and Equity
PCL637	Deviant Behaviors at Workplace
PCL638	Competency Mapping and Workplace Assessment
PCL639	Employee Engagement and Job Satisfaction

Skill Enhancement			
Code	Name	L-T-P	Credit
PCP501	Tools and Techniques of Professional Psychology-I	0-0-4	2
PCP502	Tools and Techniques of Professional Psychology-II	0-0-4	2

Applied Psychology	
PCL539	Educational Psychology
PCL540	Advance Health Psychology
PCL541	Sports Psychology
PCL542	Forensic Psychology
PCL640	Applications of Positive Psychology
PCL641	Psychology in Disaster Management
PCL642	Psychology of Social Justice
PCL643	Psychosocial Understanding of Gender

*PE will be offered as per the availability of resources / Instructors and the minimum number of registrations. The right to decide on this will remain with the HOD of the department to run the course.

S.No.	Course	L-T-P	Credit
1	Open Elective - I	2-0-2	3
2	Open Elective - II	2-0-2	3
3	Open Elective - III	2-0-2	3

*Indian Knowledge Systems will be offered as OE; however MA Psychology students will not be eligible to opt for this paper as this course is offered to them as Core paper.

S.No.	Course Code	Course Name	Credit
1	PCT601	Summer Internship	4
2	PCC502	Research Seminar	2
3	PCD601	Dissertation-I	4
4	PCD602	Dissertation-II	8

Sem.	Course Code	Course Name	Credit
1	PCS501	Community Service-I	2
2	PCS502	Community Service-II	
3	PCS601	Community Service-III	2
4	PCS602	Community Service-IV	

MA PSYCHOLOGY SCHEME OF STUDY (2024 - 2025)

Sem	Semester Course Code, Course Name (L-T-P) Credits							Hrs. Per week L- T- P		Credits		
	1	PCL509 Paradigms in Psychology (3-1-0) 4	PCP501 Tools and Techniques of Professional Psychology-I (0-0-4) 2	Programme Elective - I (3-0-0) 3	PCL513 Advanced Research Methodology (3-1-0) 4	PCL511 Behavioral Science and People Analytics (3-1-0) 4	Programme Elective - II (3-0-0) 3	PCS501 Community Service-I	15		3	4
2	PCL512 Culture and Psychology (3-1-0) 4	PCP502 Tools and Techniques of Professional Psychology-II (0-0-4) 2	Open Elective-I (2-0-2) 3	PCC502 Research Seminar 2 Credit	Programme Elective - III (3-0-0) 3	PCL514 Workplace Communication (3-1-0) 4	PCS502 Community Service-II 140hrs** 2 Credits	11	2	6	20	
Summers	PCT601 Summer Internship (4 Credits) of minimum 6-8 weeks											4
Exit Option: PG Diploma in Psychology (Clinical/ Organizational/ Applied) shall be awarded after completion of Credits												
3	PCL603 Indian Knowledge Systems (3-1-0) 4	Programme Elective -IV (3-0-0) 3	Open Elective-II (2-0-2) 3	PCL605 AI and Human Behaviour (3-1-0) 4	Programme Elective - V (3-0-0) 3	PCD601 Dissertation I (4 Credits)	PCS601 Community Service-III	14	2	2	21	
4	PCL604 Cognitive Neuroscience (3-1-0) 4	Programme Elective - VI (3-0-0) 3	Open Elective III (2-0-2) 3		PCD602 Dissertation II (8 Credits)	PCS602 Community Service-IV 140hrs** 2 Credits		8	1	2	20	
Total								48	8	14	85	

* After completing 44 credits in the first year the student shall be eligible to exit with a PG Diploma in Psychology. If the student wishes to continue and finishes the remaining credits, the student shall be eligible for a Masters in Arts (Psychology).

** Students completing 6 electives from a particular specialization (Clinical/ Organizational/ Applied), will be eligible for an award of specialization certificate on successful completion of 85 credits at the time of award of degree.

***Student not choosing any specialization shall be awarded with regular MA Psychology degree on successful completion of 85 credits.

CENTRE FOR LANGUAGE LEARNING

The Centre for Language Learning employs novel methodologies to encourage appropriate use of language in order to reconcile the varying demands of communication in the modern socio-economic milieu. The mission of the department is:

- To provide language proficiency so that the students are empowered to function confidently in the international and intercultural environment which they live in and work
- To promote holistic development of students by imbibing moral values and professional ethics
- Encourage students to develop critical-thinking abilities to study and learn a foreign language thus enhancing their employability prospects
- Inspire students to use language as a powerful tool of communication that enables them to act independently and freely.

The centre, as a part of the School of Management and Liberal Studies, is offering the following programmes in the academic year 2024-2025:

1. B.A. (Hons.) English

The NorthCap University's B.A. (Hons.) English programme will help students to become an expert in reading, analyzing and discussing literary texts. The curriculum for B.A. (Hons.) English covers the cultural, social, historical and political dimensions of key events and eras that have had a huge impact on the present-day civilization. The programme aims to develop awareness about different cultures and ethnicities among the students through different forms of literature. They will be exposed to the study of major genres, styles, and forms of literature belonging to various ages so that they can acquire both sensitivity and creativity. They will emerge with a skill set that's sought after for careers in the arts, publishing and media. This programme will prepare students to develop an international perspective and bring them at par with English Literature students across the globe. They will be able to connect knowledge acquired through courses in liberal studies disciplines together in unique ways and thus reap the benefits of an integrated and interdisciplinary education.

B.A. (Hons.) English programme will also help students to:

- Develop their linguistic skills so that they can become efficient copywriters, translators and content writers.
- Enhance their research and analytical skills which will help them to excel at the professional level.

Upon completion of B.A. (Hons.) English degree, a student will acquire knowledge and skills necessary to obtain a professional position or pursue a postgraduate degree in a variety of fields such as English Literature, Mass Communication, Journalism, Media studies etc. They will develop the capacity to:

- Formulate effective responses to specific interdisciplinary problems
- Connect their personal beliefs to their professional practice
- Write and speak professionally for diverse audiences
- Think critically as well as creatively.

2. M.A. English

The MA programme at NCU will allow students to be exposed to both canonical as well as contemporary literature so that their foundational knowledge is strengthened. They will also be encouraged to identify a research area and gain some understanding of that area while working closely with a faculty member for their dissertation. The curriculum is designed to help them understand various literary periods; become familiar with different domains of study; and recognize the changes that have come about in the field of literary criticism. This will prepare them to succeed in both academic careers and those that lie outside the academia. The degree will equip the students to face the challenges of 21st century professional spaces head on. Some of the salient features of the programme are as given under:

- It is a two-year postgraduate programme that deals with the study of Literatures in English from across the world.
- It equips the students with analytical and critical thinking skills to produce original insights through scholarly academic writing and discourse.
- The programme will foster an understanding of fundamental literary concepts, tendencies and trends across periods, genres and cultures in English literature, literary theory and approaches to composition and rhetoric.
- The subject matter includes topics like Literary Criticism; Classical & Contemporary Poetry, Drama & Fiction; and Visual Arts.
- Students will learn to consider sources of information and evaluate the nuances of meaning, authenticity of the language, and its impact.

3. B.A. JOURNALISM AND MASS COMMUNICATION - MEDIA PRODUCTION

About the Programme:

The B.A. Journalism and Media Production is a 3-year undergraduate program spanning 6 semesters. It provides in-depth knowledge of journalism basics, media ethics, and news-based media production skills. The curriculum offers a holistic, experiential, and globally relevant education in journalism and related fields. Core subjects include Media Communication Concepts, Translation Skills, and Introduction to Journalism, covering communication theories, multilingual reporting, and journalistic principles. Specialised courses like News Production for Television and Print, Media Technology, and Digital Media Production teach practical content creation skills. Media Laws and Ethics, Development Communication, and courses in Reporting, Anchoring, and Presentation develop ethical, legal, and reporting expertise.

Electives like Photojournalism, Podcast Production, and Civic and Crime Reporting enhance specialized skills. Subjects like Media and Contemporary Issues, Global Media, and Political Reporting promote critical thinking and global awareness. Practical experience is provided through Documentary Production, Live Show Production, and Media Post Production. Skill Development Courses, including a Minor Project, Summer Internship, and Graduation Project, offer real-world experience and portfolio development, preparing students for diverse media industry roles.

BACHELORS WITH HONOURS IN ENGLISH [B.A. (HONS.) ENGLISH] (2024 - 2025)

Overall Structure		
S. No.	Type of Courses	Credits
1	Core Courses	56
2	Compulsory Courses	17
3	Programme Electives	19
4	Open Electives	12
5	Internships	8
6	Major Project	6
7	Community Service	6
8	Ability Enhancement Courses (AEC)	4
9	Seminar	2
10	General Proficiency	6
Total:		136 credits

Programme Core (PC)					Compulsory Courses																			
S. No.	Core Courses	Course Codes	Contact Hours	Credits	S. No.	Courses	Course Codes	Contact Hours	Credits															
1	History of English Literature	CLL105	4 per week	4(3-1-0)	1	Principles of Management	BSL102	4 per week	3(2-0-2)															
2	Poetry- I (14 th -18 th Century)	CLL106	4 per week	4(3-1-0)	2	Introduction to Psychology	PCL103	4 per week	3(2-0-2)															
3	British Drama - I (16 th to 18 th century)	CLL107	4 per week	4(3-1-0)	3	Creative Writing	CLP120	2 per week	1(0-0-2)															
4	British Novel - I	CLL208	4 per week	4(3-1-0)	4	Human Values and Professional Ethics	CLL120	2 per week	2(2-0-0)															
5	Poetry - II	CLL205	4 per week	4(3-1-0)	5	Environmental Studies	CHL100	3 per week	3(3-0-0)															
6	Popular Literature	CLL207	4 per week	4(3-1-0)	6	Basic Computer Skills for Professionals	CSV100	4 per week	2(0-0-4)															
7	Modern British Drama	CLL202	4 per week	4(3-1-0)	7	Entrepreneurship	BSL101	4 per week	3 (2-0-2)															
8	British Novel - II	CLL206	4 per week	4(3-1-0)	Ability Enhancement Courses (AEC) <table border="1"> <thead> <tr> <th>S. No.</th> <th>Courses</th> <th>Course Codes</th> <th>Contact Hours</th> <th>Credits</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Effective Communication - I</td> <td>CLL130</td> <td>3 per week</td> <td>2(1-0-2)</td> </tr> <tr> <td>2</td> <td>Effective Communication - II</td> <td>CLL140</td> <td>3 per week</td> <td>2(1-0-2)</td> </tr> </tbody> </table>					S. No.	Courses	Course Codes	Contact Hours	Credits	1	Effective Communication - I	CLL130	3 per week	2(1-0-2)	2	Effective Communication - II	CLL140	3 per week	2(1-0-2)
S. No.	Courses	Course Codes	Contact Hours	Credits																				
1	Effective Communication - I	CLL130	3 per week	2(1-0-2)																				
2	Effective Communication - II	CLL140	3 per week	2(1-0-2)																				
9	World Literature	CLL203	4 per week	4(3-1-0)																				
10	Literary Criticism	CLL303	4 per week	4(3-1-0)																				
11	Women's Writing	CLL304	4 per week	4(3-1-0)																				
12	Postcolonial Literature	CLL302	4 per week	4(3-1-0)																				
13	American Literature	CLL301	4 per week	4(3-1-0)																				
14	Short Stories and Novella	CLL305	4 per week	4(3-1-0)																				

General Proficiency (GP)				Community Service (CS)				
S. No.	General Proficiency	Code	Credits	S. No.	Community Service	Code	Contact Hours	Credits
1	General Proficiency 1	CLR101	1	1	Community Service 1	CLS101	140	2
2	General Proficiency 2	CLR102	1	2	Community Service 2	CLS102		
3	General Proficiency 3	CLR201	1	3	Community Service 3	CLS201	140	2
4	General Proficiency 4	CLR202	1	4	Community Service 4	CLS202		
5	General Proficiency 5	CLR301	1	5	Community Service 5	CLS301	140	2
6	General Proficiency 6	CLR302	1	6	Community Service 6	CLS302		

Programme Electives (PE)					Seminar + Internship + Major Project				
S. No.	Courses	Course Codes	Contact Hours	Credits	S. No.	Course Name	Code	Contact Hours	Credits
1	Indian Writing in English	CLL204	4 per week	4(3-1-0)	1	Seminar	CLC102	4 per week	2
2	Modern European Drama	CLL240	4 per week	4(3-1-0)	2	Internships	CLT201 & CLT301	8 per week	8
3	British Prose	CLL250	4 per week	4(3-1-0)	3	Major Project	CLD302	12 per week	6
4	Partition Literature	CLL260	4 per week	4(3-1-0)					
5	Introduction to Creative Writing	CLL320	4 per week	4(3-1-0)					
6	Film Studies	CLL340	4 per week	4(3-1-0)					
7	Media and Communication Skills	CLL370	4 per week	4(3-1-0)					
8	Gothic Fiction	CLL380	4 per week	4 (3-1-0)					
9	Foreign Language 1 (Compulsory Elective)		3 per week	3(1-2-0)					

B.A. (Hons.) English Programme Scheme (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per Week			Contact Hours Per Sem	Credits
	CLL105	CLL106	CHLI00	PCLI03	BSLI02	CSV100	CLSI01	GP-I	L	T		P				
1	History of English Literature (3-1-0) 4	Poetry-I (14th-18th Century) (3-1-0) 4	Environmental Studies (3-0-0) 3	Introduction to Psychology (2-0-2) 3	Principles of Management (2-0-2) 3	Basic Computer Skills for Professionals (0-0-4) 2	CLSI01 CS-I	1 Credit	13	2	8	23X15= 330	20			
2	British Drama-I (16th-18th Century) (3-1-0) 4	Foreign Language Elective (1-2-0) 3	Entrepreneurship (2-0-2) 3	CLLI20 Human Values and Professional Ethics (2-0-0) 2	CLP120 Creative Writing (0-0-2) 1	CLLI30 Effective Comm-I (1-0-2) 2	CLSI02 CS-2 (140 hrs)* 2 Credit	1 Credit	9	3	10	22X15= 330	20			
Summers	CLT201 Summer Internship (0-0-8) 4													4		
3	British Novel-I (3-1-0) 4	Poetry-II (3-1-0) 4	Popular Literature (3-1-0) 4	PE-I (3-1-0) 4	Open Elective-I (3-0-0) 3	CLLI40 Effective Comm-II (1-0-2)2	CLS201 CS-III	1 Credit	16	4	2	22X15= 330	22			
4	Modern British Drama (3-1-0) 4	British Novel-II (3-1-0) 4	World Literature (3-1-0) 4	PE-II (3-1-0) 4	Open Elective-II (3-0-0) 3		CLS202 CS-4 (140 hrs)* 2 Credit	1 Credit	15	4	0	19X15= 285	22			
Summers	CLT301 Summer Internship (0-0-8) 4													4		
5	American Literature (3-1-0) 4	Literary Criticism (3-1-0) 4	Short Stories & Novella (3-1-0) 4	PE-III (3-1-0) 4	Open Elective-III (3-0-0) 3		CLS301 CS-5	1 Credit	15	4	0	19X15= 285	20			
6	Post-Colonial Literature (3-1-0) 4	Women's Writing (3-1-0) 4	PE-IV (3-1-0) 4	Open Elective-IV (3-0-0) 3	Major Project CLD302 (0-0-12) 6		CLS302 CS-6 (140 hrs)* 2 Credit	1 Credit	12	3	12	27X15= 345	24			
TOTAL									80	20	32	132X15= 1980	136			

- The University shall conduct introductory sessions in the 1st semester on soft skills, which are a set of transferable skills and key personal traits essential for personality development.
- A value-added course over and above the programme scheme shall be offered during the 4th Semester to impart special skills to students for enhancing their employability.
- Advanced sessions on soft skills shall be conducted in the 5th Semester to hone up the preparedness of students for placements and make them industry ready for national and international job.

MASTERS IN ENGLISH [M.A. ENGLISH] (2024 - 2025)

Overall Structure		
S. No.	Type of Courses	Credits
1	Core Courses	44
2	Programme Electives	12
3	Open Electives	6
4	Minor Project (Research Paper Presentation)	2
5	Internships	4
6	Dissertation	10
7	Community Service	4
8	Seminar	4
9	Value Added Course	0
Total:		86 credits

Programme Core (PC)				
S. No.	Courses	Course Code	Contact Hours	Credits
1.	Poetry from Chaucer to Milton	ELL501	5 per week	4 (3-0-2)
2.	17-18 th Century Literature	ELL502	5 per week	4 (3-0-2)
3.	Drama from Miracle Plays to Shakespeare: 14 th -16 th Century	ELL503	5 per week	4 (3-0-2)
4.	19 th Century Literature	ELL504	5 per week	4 (3-0-2)
5.	20 th Century Literature	ELL506	5 per week	4 (3-0-2)
6.	Classical Literature (Indian and Western)	ELL601	5 per week	4 (3-0-2)
7.	Indian Literature in English Translation	ELL602	5 per week	4 (3-0-2)
8.	Shakespearean Drama and Poetry	ELL603	5 per week	4 (3-0-2)
9.	Postcolonial Literature	ELL604	5 per week	4 (3-0-2)
10.	Literary Criticism	ELL605	5 per week	4 (3-0-2)
11.	Literary Theory	ELL606	5 per week	4 (3-0-2)

Community Service (CS)				
S. No.	Community Service	Course Code	Contact Hours	Credits
1	Community Service-I	ELS501	140	2
2	Community Service-II	ELS502		
3	Community Service-III	ELS601	140	2
4	Community Service-IV	ELS602		

Programme Elective (PE)				
S. No.	Courses	Course Code	Contact Hours	Credits
PE I				
1	Communication Studies	ELL551	5 per week	4(3-0-2)
2	Language and Linguistics	ELL553	5 per week	4(3-0-2)
3	Popular Culture Studies	ELL555	5 per week	4(3-0-2)
4	American Literature	ELL557	5 per week	4(3-0-2)
PE II				
1	Gender Studies	ELL552	5 per week	4(3-0-2)
2	Visual Studies	ELL554	5 per week	4(3-0-2)
3	Forms of Popular Literature	ELL556	5 per week	4(3-0-2)
4	New Literatures in English	ELL558	5 per week	4(3-0-2)
PE III				
1	Literatures from the Margins	ELL651	5 per week	4(3-0-2)
2	Graphic Narratives	ELL653	5 per week	4(3-0-2)
3	Science Fiction	ELL655	5 per week	4(3-0-2)
4	Conflict and Memory Studies	ELL657	5 per week	4(3-0-2)

Skill Development Course/ Research Based Learning/ Value Added Course/ Seminar				
S. No.	Courses	Course Code	Contact Hours	Credits
1	Minor Project: Research Paper Presentation	ELD501	4 per week	2 (0-0-4)
2	Dissertation-I	ELD601	10 per week	10 (0-0-10 + 0-0-10)
3	Dissertation-II	ELD602	10 per week	10 (0-0-10 + 0-0-10)
4	Value Added course - Research Methods and Critical Writing	ELL505	5 per week	-(3-0-2)
5	Seminar each semester	ELC501/ ELC502/ ELC601/ ELC602	1 per week	1(1-0-0)
6	Internship	ECT201		4

PROGRAMME SCHEME FOR M.A. ENGLISH (2 Year Plan) (2024 - 2025)

Sem	Course Code, Course Name (L-T-P) Credits		Skill Development Course/Research Based Learning	Open Elective	Seminar	Community Service Hours	Contact Hours	Credits
I	Poetry from Chaucer to Milton 4(3-0-2) [ELL501]	Drama from Miracle Plays to Shakespeare: 14 th -16 th Century 4(3-0-2) [ELL503]	Research Methods and Critical Writing (3-0-2) [ELL505] (Value added course)	PE I 4(3-0-2) [ELL551/ ELL553/ ELL555/ ELL557]	ELC501 Seminar-I 1 credit	ELS501 Community Service	22	13
II	17-18th Century Literature 4(3-0-2) [ELL502]	19th Century Literature 4(3-0-2) [ELL504]	20th Century Literature 4(3-0-2) [ELL506]	PE II 4(3-0-2) [ELL552/ ELL554/ ELL556/ ELL558]	ELC502 Seminar-II 1 credits	ELS502 Community Service (2)* (140 hours)	24	20+2+2 (Minor Project and Community Service) = 24
Internship 4-0-0 (4 credits) is mandatory after the first year. The exit plan after first year will be considered after the internship only and the exit will be named as BA (Hons.)English/ BA English Research.								
III	Classical Literature (Indian and Western) 4(3-0-2) [ELL601]	Shakespearean Drama and Poetry 4(3-0-2) [ELL603]	Literary Criticism 4(3-0-2) [ELL605]	Open Elective II 3 (3-0-0)	ELC601 Seminar-III 1 credit	ELS601 Community Service	19	16 + 5 (dissertation) =21
IV	Indian Literature in English Translation 4(3-0-2) [ELL602]	Postcolonial Literature 4(3-0-2) [ELL604]	Literary Theory 4(3-0-2) [ELL606]		ELC602 Seminar-IV 1 credit	ELS602 Community Service(2)* (140 hours)	21	17+ 5+2 (Dissertation and Community Service) =24
Total:							86	82 + 4 (internship) = 86

*Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year

**Minor Project = Research Paper Presentation

i) Skill Set: Training, communication, relationship management

ii) Employment Opportunities: Corporate Communications trainer, communications expert and relationship managers

Centre for Language Learning

B.A. Journalism and Mass Communication - Media Production (The Overall Credit Structure) (2024 - 2025)

Category	PC	Projects & Internships	GE	GP	PE	OE	CS	Total
Credits	81	46	12	6	12	9	6	85

Programme Core (PC)							
Code	Course	L-T-P	C	Code	Course	L-T-P	C
MSL101	Media Communication Concepts	3-0-0	3	JML202	Data Journalism	2-0-0	2
JML101	Translation Skills	2-1-0	3	JML204	Media and Society	2-1-0	3
JML103	Introduction to Journalism	3-1-0	4	JMP202	Anchoring and Presentation Skills	1-0-4	3
JMP101	News Production for Television and Print	1-0-6	4	JML301	Media and Contemporary Issues	3-1-0	4
MSL102	Media Technology	4-0-0	4	JML303	Global Media	3-1-0	4
JML102	Development Communication	2-0-0	2	JMP301	Production Management	1-0-6	4
JML104	Reporting and Journalistic Writing	2-1-0	3	JML401	Contemporary Issues	4-2-0	6
JMP102	Digital Media Production and Techniques	1-0-4	3	JMP401	Virtual Production	1-0-6	4
MSL301	Media Law and Ethics	3-0-0	3	JMP403	Media Post Production	1-0-6	4
JML201	Public Relations and Corporate Communication	3-1-0	4	JMP405	Research for Publication	0-0-12	6
JMP201	Production of Live Shows	2-0-4	4	TOTAL		48-9-48	81
MSL302	Research Techniques	4-0-0	4				

Programme Elective (PE)				Projects & Internships			
Code	Course	L-T-P	C	Code	Course	L-T-P	C
JMP132	Photo Journalism	1-0-4	3	JMD201	Minor Project	0-0-8	4
JMP134	Radio and Podcast Production	1-0-4	3	JMT301	Summer Internship - I	0-0-8	4
JMP231	Civic and Crime Reporting	1-0-4	3	JMT401	Summer Internship - II	0-0-8	4
JMP233	Documentary Production	1-0-4	3	JMT302	Internship	0-0-12	6
JML231	Business Journalism	2-0-0	2	JMD302	Major Project	0-0-16	8
JML233	Sports Journalism	2-0-0	2	JMD402	Graduation Project	0-0-20	10
JML331	Political Reporting	4-0-0	4	JMD404	Dissertation	0-0-20	10
JML333	News Feature Production	4-0-0	4				

General Elective (GE)				Open Elective (OE)			
Code	Course	L-T-P	C	Code	Course	L-T-P	C
CLL120	Human Values & Professional Ethics	2-0-0	2		Open Elective-I	2-0-2	3
CHL100	Environmental Studies	3-0-0	3		Open Elective-II	2-0-2	3
CLL130	Effective Comm-I	1-0-2	2		Open Elective-III (Full MOOC)	2-0-2	3
CLL140	Effective Comm-II	1-0-2	2				
	Foreign Language Elective	1-2-0	3				

Community Service (CS)				General Proficiency (GP)			
Code	Course		C	Code	Course		C
JMS101	CS-I		2	JMR101	GP-I		1
JMS102	CS-II (140 Hrs)*			JMR102	GP-II		1
JMS201	CS-III		2	JMR201	GP-III		1
JMS202	CS-IV (140 Hrs)*			JMR202	GP-IV		1
JMS301	CS-V		2	JMR301	GP-V		1
JMS302	CS-VI (140 Hrs)*			JMR302	GP-VI		1

B.A. Journalism and Mass Communication - Media Production (2024 - 2025)

Semester	Semester Course Code, Course Name (L-T-P) Credits										GP	Hrs. Per Week			Contact Hours Per Sem	Credits									
	Community Service											L	T	P											
	Community Service																								
1	MSL101 Media Communication Concepts (3-0-0) 3	JML101 Translation Skills (2-1-0) 3	JML103 Introduction to Journalism (3-1-0) 4	JMPI01 News Production for Television and Print (1-0-6) 4	CLL120 Human Values & Professional Ethics (2-0-0) 2	CHL100 Environmental Studies (3-0-0) 3	JMS101 CS-I 1 Credit	JMR101 GP-I 1 Credit	14	2	6	22*15=330	20												
2	MSL102 Media Technology (4-0-0) 4	JML102 Development Communication (2-0-0) 2	JML104 Reporting and Journalistic Writing (2-1-0) 3	PE 1 (1-0-4) 3	JMPI02 Digital Media Production and Techniques (1-0-4) 3	CLL130 Effective Comm-I (1-0-2) 2	JMS102 CS-II (140 Hrs)* 2 Credit	JMR102 GP-II 1 Credit	11	1	10	22*15=330	20												
Summers	Vocational Course / JMD201 Minor Project (0-0-8) 4										0	0	8	4											
3	MSL301 Media Laws and Ethics (3-0-0) 3	JML201 Public Relations and Corporate Communication (3-1-0) 4	JMP201 Production of Live Shows (2-0-4) 4	PE 2 (1-0-4) 3	Foreign Language Elective (1-2-0) 3	CLL140 Effective Comm-II (1-0-2) 2	JMS201 CS-III 1 Credit	JMR201 GP-III 1 Credit	11	3	10	24*15=360	20												
4	MSL302 Research Techniques (4-0-0) 4	JML202 Data Journalism (2-0-0) 2	JML204 Media and Society (2-1-0) 3	PE-3 (2-0-0) 2	JMP202 Anchoring and Presentation Skills (1-0-4) 3	Open Elective-I (2-0-2) 3	JMS202 CS-IV (140 Hrs)* 2 Credit	JMR202 GP-IV 1 Credit	13	1	6	20*15=300	20												
Semester	Semester Course Code, Course Name (L-T-P) Credits										Community Service			GP			Hrs. Per Week			Contact Hours Per Sem			Credits		
Summers	Vocational Course / JMT301 Summer Internship (0-0-8) 4										0	0	8	4											
5	JML301 Media and Contemporary Issues(3-1-0) 4	JML303 Global Media (3-1-0) 4	JMP301 Documentary Production (1-0-6) 4	PE-4 (4-0-0) 4	Open Elective-II (2-0-2) 3		JMS301 CS-V 1 Credit	JMR301 GP-V 1 Credit	12	2	8	23*15=345	20												
6	JMT302 Internship (0-0-12) 6	JMD302 Major Project (0-0-16) 8	Open Elective-III (Full MOOC) 3				JMS302 CS-VI (140 Hrs)* 2 Credit	JMR302 GP-VI 1 Credit	0	0	28	28*15=420	20												
Summers	Vocational Course / JMT301 Summer Internship (0-0-8) 4										0	0	8	4											
7	JML401 Contemporary Research (4-2-0) 6	JMP401 Virtual Production (1-0-6) 4	JMP403 Media Post Production (1-0-6) 4	JMP405 Research for Publication (0-0-12) 6	Open Elective-II (2-0-2) 3		JMS301 CS-V 1 Credit	JMR301 GP-V 1 Credit	7	2	22	31*15=465	20												
8	JMD402 Graduation Project (0-0-20) 10	JMD404 Dissertation (0-0-20) 10					JMS302 CS-VI (140 Hrs)* 2 Credit	JMR302 GP-VI 1 Credit	0	0	40	40*15=600	20												
TOTAL																			172						

B.A. Journalism and Mass Communication - Media Production (2024 - 2025)

Programme Electives		
TRACK	Track 1 - News Media Production	Track 2 - Feature Media Production
PE - 1	JMP132 Photo Journalism (1-0-4) 3	JMP134 Radio and Podcast Production (1-0-4) 3
PE - 2	JMP231 Civic and Crime Reporting (1-0-4) 3	JMP233 Documentary Production (1-0-4) 3
PE - 3	JML231 Business Journalism (2-0-0) 2	JML233 Sports Journalism (2-0-0) 2
PE - 4	JML331 Political Reporting (4-0-0) 4	JML333 News Feature Production (4-0-0) 4

SCHOOL OF LAW

INTRODUCTION OF SCHOOL OF LAW DEPARTMENT

NCU Law School will strive to achieve excellence in legal education through globally relevant academic programmes, outstanding faculty members, interactive teaching pedagogy, limitless clinical trainings and far-reaching projects

The innovatively conceived 5 year integrated B.B.A.LL.B. (Honours) and three years LL.B. Degree Programmes of NCU Law School integrates the study of law with management in a semester mode for enhancing the employability of NCU Law Students and for a stress free legal education in an era of specialty and super specialty subjects.

Learning at NCU Law School would stretch beyond the boundary of prescribed syllabus. A team of distinguished Judges, Legal Practitioners and Consultants, Social Activists, Corporate Counsels, and Faculty Members of law schools across the country would intimately nurture the talent of the students.

NCU Law School has transformed to an unique "Knowledge Centre" where each student would be empowered with the knowledge, passion and drive to excel as leaders in the legal profession, judiciary, public service, non-profit & non-governmental organizations, entrepreneurships, and corporate entities. NCU Law School is a preferred destination for every "Law" aspirant and a benchmark for budding law schools of the country.

NCU Law School is a place of continual activity, and unrelenting vitality. The array of experiences and opportunities that the Law School offers has no parallel in legal education in India. The range of academic and extracurricular activities, along with the variety of faculty and students, will make each day a potential adventure.

NCU Law School's commitment to rigorous and exciting legal training is intimately connected to the The NorthCap University's commitment to path breaking scholarship. Using a wide range of methodology NCU Law School provides in its classrooms and co/extra-curricular activities an extraordinary educational experience. It will inculcate all the required skills such as Good oral and written communication skills, Analytical and Reasoning Skills, Initiative, Personal Impact, Resilience, Teamwork, Legal Awareness, Planning and Organizing, through its innovative course matrixies and bringing to bear insights from numerous other academic disciplines, the faculty of NCU Law School will plumb the depths of everything.

Vision of the School of Law

The vision of School of Law is to be to be ranked amongst some of the best law schools in India with a passion to achieve academic excellence through innovation, quality research and social commitment of international standards and emerge as a preferred destination for students, faculty, employers and collaborators.

Mission of the School of Law

- To blend theory and practice in the pedagogical process to produce lawyers of highest caliber and encourage them to become effective and compassionate counselors.
- To engage in interdisciplinary research synergizing with the other schools of the University.
- To nurture the students within, and beyond, the classroom enabling them to emerge as leaders in their profession and contribute to nation building.
- To provide a dynamic and supportive scholarly community facilitating inclusiveness and celebrating diversity

PROGRAMMES AT SCHOOL OF LAW

- BBA. LLB (HONS.)
- LL.B.
- LL.M. with Specialization in
 - Corporate Law
 - Human Rights Law
 - Intellectual Property Rights

CREDIT DETAILS FOR BBA.LL.B. (HONS.)- (2024 - 2025)

5 Year integrated Bachelor of Business Administration and Bachelor of Law Degree Course

Management Courses		L-T-P	C
BSL102	Principles of Management	2-0-2	3
BSL101	Entrepreneurship	3-0-0	3
ENL102	Principles of Economics	2-0-2	3
CML101	Professional Accounting	2-0-2	3
PCL130	Introduction to Psychology	2-0-2	3
BSL230	Organization Theory and Behaviour	2-0-2	3
BSL203	Human Resource Management	2-0-2	3
BSL205	Fundamentals of Financial Management	3-1- 0	4
BSL335	Marketing of Services	2-0-2	3
BSL207	Introduction to Marketing Management	2-0-2	3
BSL330	Business Environment	2-0-2	3
English Courses			
CLL103	Effective Communication for Law - I	3-1-0	4
CLL104	Effective Communication for Law - II	3-1-0	4
Compulsory Law Courses			
LBL113	Law of Contract-I	4-1-0	4
LBL112	Legal Method	4-1-0	4
LBL111	Law of Tort	4-1-0	4
LBL116	Law of Contract - II	4-1-0	4
LBL114	Law and Society	4-1-0	4
LBL211	Constitutional Law - I	4-1-0	4
LBL212	Law of Contract - II	4-1-0	4
LBL213	Law of Crimes I	4-1-0	4
LBL214	Family Law - I	4-1-0	4
LBL215	Constitutional Law - II	4-1-0	4
LBL216	Law of Crimes II	4-1-0	4
LBL217	Family Law - II	4-1-0	4
LBL311	Labour Law -I	4-1-0	4
LBL312	Company Law	4-1-0	4
LBL313	Law of Evidence	4-1-0	4
LBL314	Public International Law	4-1-0	4
LBL315	Property Law	4-1-0	4
LBL316	Labour Law - II	4-1-0	4
LBL317	Environmental Law	4-1-0	4
LBL318	Jurisprudence	4-1-0	4
LBL411	Intellectual Property Rights	4-1-0	4
LBL414	Mediation & Conciliation and Arbitration	4-1-0	4
LBL412	Code of Civil Procedure	4-1-0	4
LBL413	Administrative Law	4-1-0	4
LBL511	Law of Taxation	4-1-0	4
Compulsory Clinical Courses			
LBT101	Internship - I	0-0-6	3
LBT201	Internship - II	0-0-6	3
LBT301	Internship - III	0-0-6	3
LBT401	Internship - IV	0-0-6	3
LBT501	Moot Court and Professional Internship	0-0-6	3
LBC421	Moot Court	0-0-6	3
LBC422	Alternative Dispute Resolution	4-1-0	4
LBC423	Seminar Course	0-0-6	3
LBC521	Professional Ethics	4-1-0	4
LBC522	Drafting, Pleading & Conveyancing	4-1-0	4
Programme/Specialization Electives			
LBL161	Criminology	4-1-0	4
LBL162	Right to Information and Accountable Governance	4-1-0	4
LBL261	Competition Law	4-1-0	4
LBL262	Food Security Laws	4-1-0	4
LBL263	Penology & Victimology	4-1-0	4
LBL441	Indian Federalism	4-1-0	4
LBL442	Comparative Constitution	4-1-0	4
LBL362	International Air and Space Law	4-1-0	4
LBL364	Disaster, Development & Human Rights	4-1-0	4
LBL461	Insurance Law	4-1-0	4
LBL462	Criminal Justice Administration	4-1-0	4
LBL463	Media Law	4-1-0	4
LBL447	Practice of Corporate Law	4-1-0	4
LBL464	Health Law	4-1-0	4
LBL465	Cyber Law	4-1-0	4
LBL466	Transparency and Accountability Laws	4-1-0	4
LBL448	Market Regulation in India	4-1-0	4

LBL561	Clean Energy & Sustainability Laws	4-1-0	4
LBL562	Science, Technology and Law	4-1-0	4
LBL563	International Trade Law	4-1-0	4
LBL564	International Commercial Arbitration	4-1-0	4
LBL565	Election Laws	4-1-0	4
University-Wide Compulsory Courses			
CHL100	Environmental Studies	3-0-0	3
CLL120	Human Values and Professional Ethics	2-0-0	2
Honours Courses			
Honours 1: Constitutional Law			
LBL361	Interpretation of Statutes	4-1-0	4
LBL264	Affirmative Action and Discriminative Justice	4-1-0	4
LBL443	Gender Justice and Feminist Jurisprudence	4-1-0	4
LBL444	Judicial Process and Independence of Judiciary	4-1-0	4
Honours 1: Corporate Law			
LBL445	Advanced Contract Drafting	4-1-0	4
LBL446	Business Formation	4-1-0	4
LBL363	Corporate Governance and CSR	4-1-0	4
LBL429	Law of Bankruptcy and Insolvency	4-1-0	4
Honours 2: Intellectual Property Rights (IPR)			
LBL541	Patent Law	4-1-0	4
LBL542	Copyright and Neighbouring Rights	4-1-0	4
LBL543	Trademark and Design	4-1-0	4
LBL544	Geographical Indications and other related laws	4-1-0	4
Honours 2: International Law			
LBL545	International Organization	4-1-0	4
LBL546	International Humanitarian Law	4-1-0	4
LBL547	International Environmental Law	4-1-0	4
LBL548	Refugees, IDPs & Stateless Persons	4-1-0	4
LBL549	Private International Law	4-1-0	4
LBL550	International Human Rights Law	4-1-0	4

Course Credit Scheme of the B.B.A. LL.B. (Hons.) (2024 - 2025)

SEM	COURSE 1	COURSE 2	COURSE 3	COURSE 4	COURSE 5	COURSE 6	COURSE 7	GENERAL PROFICIENCY /VALUE ADDED COURSES	COMMUNITY SERVICES	TOTAL COURSES	MOOT COURT HRS	L	T	P	Project Work Hours	Contact Hours per week	Credits
I	CLL103 Effective Comm. for Law-I (3-1-0) 4	BSL101 Entrepreneurship (2-0-2)3	BSL102 Principles of Management (2-0-2) 3	LBL113 Law of Contract-I (4-1-0) 4	PCL130 Introduction to Psychology (2-0-2) 3	LBL112 Legal Method (4-1-0) 4		LBR101 GP-I 1 credit	LCS101 CS I	6	6	17	3	2	6	36	22
II	CLL104 Effective Comm for Law-II (3-1-0) 4	ENL102 Principles of Economics (2-0-2)3	CML101 Professional Accounting (2-0-2)3	CHL100 Environmental Studies (3-0-0)3	LBL116 Law of Contract-II (4-1-0) 4	LBL111 Law of Torts (4-1-0)4	LBT101 Internship-I (0-0-4) 2	CLL120 Human Values and Professional Ethics (2-0-0)2	LCS102 CS II (140 Hours) 2 Credits**	7	6	19	3	6	2	36	27
III	BSL230 Organization Theory and Behaviour (2-0-2) 3	BSL203 Human Resource Management (2-0-2) 3	LBL211 Constitutional Law-I (4-1-0) 4	LBL114 Law and Society (4-1-0) 4	LBL213 Law of Crimes - I (4-1-0) 4	LBL214 Family Law-I (4-1-0) 4		LBR201 GP-II 1 credit	LCS 201 CS III	6	6	20	4	4	2	36	23
IV	BSL205 Fundamentals of Financial Management (3-1-0) 4	BSL335 Marketing of Services (2-0-2) 3	LBL215 Constitutional Law-II (4-1-0) 4	LBL216 Law of Crimes - II (4-1-0) 4	LBL217 Family Law-II (4-1-0) 4	Programme Elective- 1 (4-1-0)4	LBT 201 Internship-II (0-0-6) 3		LCS202 CS IV (140Hours) 2 Credits**	6	6	21	5	2	2	36	28
V	BSL207 Introduction to Marketing Management (2-0-2) 3	LBL311 Labour Law-I (4-1-0) 4	LBL312 Company Law (4-1-0) 4	LBL313 Law of Evidence (4-1-0) 4	Programme Elective- 2 (4-1-0)4	LBL314 Public International Law (4-1-0) 4		LBR301 GP-III 1 Credit	LCS301 CS V	6	6	22	5	2	1	36	24

Course Credit Scheme of the B.B.A. LL.B. (Hons.) (2024 - 2025)

SEM	COURSE 1	COURSE 1	COURSE 1	COURSE 1	COURSE 1	COURSE 1	COURSE 1	COURSE 1	COURSE 1	GENERAL PROFICIENCY /VALUE ADDED COURSES	COMMUNITY SERVICES	TOTAL COURSES	MOOT COURT HRS	L	T	P	Project Work Hours	Contact Hours per week	Credits
VI	BSL330 Business Environment (2-0-2) 3	LBL315 Property Law (4-1-0) 4	LBL316 Labour Law-II (4-1-0) 4	LBC422 ADR (4-1-0)4	LBL318 Jurisprudence (4-1-0) 4	Programme Elective- 3 (4-1-0)4	LBT301 Internship-III (0-0-6) 3	Foreign Language-I (1-2-0) 3 *NC	LCS302 CS VI (140 Hours) 2 Credits**	7	6	23	7	2				38	28
VII	LBL411 Intellectual Property Rights (4-1-0) 4	LBL412 Civil Procedure Code (4-1-0) 4	Honours 1/1 (4-1-0) 4	Honours 1/2 (4-1-0) 4	Programme Elective- 4 (4-1-0)4	LBC421 Moot Court (Project) (0-0-6) 3	LBL414 Mediation & Conciliation and Arbitration (4-1-0) 4	LBR401 GP-IV 1 Credit	LCS401 CS VII	7	6	25	6	6				36	28
VIII	LBL 317 Environmental Law (4-1-0) 4	LBL413 Administrative Law (4-1-0)4	Honours 1/3 (4-1-0) 4	Honours 1/4 (4-1-0) 4	Programme Elective- 5 (4-1-0)4	LBC423 Seminar Course (Project) (0-0-6) 3	LBT 401 Internship-IV (0-0-6) 3	Foreign Language-II (1-2-0)3 *NC	LCS402 CS VIII (140Hours) 2 Credits**	6	6	21	7	6				40	28
IX	LBL511 Law of Taxation (4-1-0) 4	LBC522 Drafting, Pleading and Conveyance (4-1-0) 4	Honours 2/1 (4-1-0) 4	Honours 2/2 (4-1-0) 4	Programme Elective- 6 (4-1-0) 4			LBR501 GP-V 1 Credit	LCS501 CS IX	5	5	20	5	0	2			32	21
X	LBC521 Professional Ethics (4-1-0)4	Honours 2/3 (4-1-0) 4	Honours 2/4 (4-1-0) 4	LBT501 Moot Court and Professional Internship (0-0-10)5					LCS502 CS X (140Hours) 2 Credits	3	3	12	3	0				18	19
										59	56	197	47	30	15			360	248

*NC- Foreign Language Courses are Voluntary Non-Credit. Certificate of completion of foreign language course shall be provided to the students.

**Students can utilize the entire year including the summer and winter break for completing 140 Community Service hours

- The University shall conduct introductory & special sessions on soft skills, which are a set of transferable skills and key personal traits essential for personality development during 3 rd & 4 th semesters.
- Two value-added courses over and above the programme scheme shall be offered during the 5 th and 6 th semesters to impart special skills to students for enhancing their employability.
- Advanced sessions on soft skills shall then be conducted in the 7 th & 8 th semesters to hone up the preparedness of students for placements and make them industry ready for national and international jobs.

Course Credit Scheme of the B.B.A. LL.B. (Hons.) (2024 - 2025)

Honors 1		
Tracks	Constitutional Law	Corporate Law
Hons1/1	LBL361 Interpretation of Statutes (4-1-0) 4	LBL445 Advanced Contract Drafting (4-1-0) 4
Hons1/2	LBL264 Affirmative Action and Discriminative Justice (4-1-0) 4	LBL446 Business Formation (4-1-0) 4
Hons1/3	LBL443 Gender Justice and Feminist Jurisprudence (4-1-0) 4	LBL363 Corporate Governance and CSR (4-1-0) 4
Hons 1/4	LBL 444 Judicial Process and Independence of Judiciary (4-1-0) 4	LBL429 Law of Bankruptcy and Insolvency (4-1-0) 4
Honors 2		
Tracks	International Law	Intellectual Property Rights
Hons 2/1	LBL545 International Organization (4-1-0) 4	LBL541 Patent Law (4-1-0) 4
Hons 2/2	LBL549 Private International Law (4-1-0) 4	LBL542 Copyright and Neighbouring Rights (4-1-0) 4
Hons 2/3	LBL548 Refugees, IDPs & Stateless Persons (4-1-0) 4	LBL543 Trademark and Design (4-1-0) 4
Hons 2/4	LBL550 International Human Rights Law (4-1-0) 4	LBL544 Geographical Indications and other related laws (4-1-0) 4

Programme/Specialization Electives

Programme Core (PC)			
Code	Course	L-T-P	Credits
LBL161	Criminology	4-1-0	4
LBL162	Right to Information and Accountable Governance	4-1-0	4
LBL261	Competition Law	4-1-0	4
LBL262	Food Security Laws	4-1-0	4
LBL263	Penology & Victimology	4-1-0	4
LBL265	Law Relating to Narcotic Drugs & Psychotropic Substances	4-1-0	4
LBL266	Juvenile Justice	4-1-0	4
LBL441	Indian Federalism	4-1-0	4
LBL442	Comparative Constitution	4-1-0	4
LBL362	International Air and Space Law	4-1-0	4
LBL364	Disaster, Development & Human Rights	4-1-0	4
LBL461	Insurance Law	4-1-0	4
LBL462	Criminal Justice Administration	4-1-0	4
LBL463	Media Law	4-1-0	4
LBL447	Practice of Corporate Law	4-1-0	4
LBL464	Health Law	4-1-0	4
LBL465	Cyber Law	4-1-0	4
LBL466	Transparency and Accountability Laws	4-1-0	4
LBL448	Market Regulation in India	4-1-0	4
LBL561	Clean Energy & Sustainability Laws	4-1-0	4
LBL562	Science, Technology and Law	4-1-0	4
LBL563	International Trade Law	4-1-0	4
LBL564	International Commercial Arbitration	4-1-0	4
LBL565	Election Laws	4-1-0	4

CREDIT DETAILS FOR LL.B.**3 Year Law Degree Course (2024 - 2025)**

Compulsory Law Courses		L-T-P	Credits
LBL321	Legal Methods (3 Y)	4-1-0	4
LBL323	Law of Contract I (3 Y)	4-1-0	4
LBL325	Law of Torts (3 Y)	4-1-0	4
LBL327	Law of Crimes I (3 Y)	4-1-0	4
LBL329	Family Law I (3 Y)	4-1-0	4
LBL322	Jurisprudence (3 Y)	4-1-0	4
LBL324	Family Law -II (3 Y)	4-1-0	4
LBL326	Law of Crimes I I(3 Y)	4-1-0	4
LBL328	Environmental Law (3 Y)	4-1-0	4
LBL332	Law of Contract II (3 Y)	4-1-0	4
LBL415	Company Law (3 Y)	4-1-0	4
LBL417	Law of Evidence (3 Y)	4-1-0	4
LBL419	Constitutional Law -I (3 Y)	4-1-0	4
LBL423	Public International Law (3 Y)	4-1-0	4
LBL425	Interpretation of Statutes (3 Y)	4-1-0	4
LBL416	Property Law (3 Y)	4-1-0	4
LBL418	Civil Procedure Code (3 Y)	4-1-0	4
LBL422	Constitutional Law -II (3 Y)	4-1-0	4
LBL424	Administrative Law (3 Y)	4-1-0	4
LBL426	Human Rights Law and Practice (3 Y)	4-1-0	4
LBL513	Labour Law I (3 Y)	4-1-0	4
LBL515	Intellectual Property Rights (3 Y)	4-1-0	4
LBL514	Labour Law II (3 Y)	4-1-0	4
LBL516	Law of Taxation (3 Y)	4-1-0	4
LBL518	Mediation & Conciliation and Arbitration (3 Y)	4-1-0	4
Compulsory Clinical Courses			
LBT104	Internship - I (3 Y)	0-0-6	3
LBT204	Internship - II (3 Y)	0-0-6	3
LBC524	Moot Court (3 Y)	0-0-6	3
LBC525	Alternative Dispute Resolution (3 Y)	4-1-0	4
LBC526	Professional Ethics (3 Y)	4-1-0	4
LBC523	Drafting, Pleading & Conveyancing (3 Y)	4-1-0	4

Programme/Specialization Electives			
LBL571	Criminology (3 Y)	4-1-0	4
LBL572	Right to Information and Accountable Governance (3 Y)	4-1-0	4
LBL573	Competition Law (3 Y)	4-1-0	4
LBL574	Food Security Laws (3 Y)	4-1-0	4
LBL576	Penology & Victimology (3 Y)	4-1-0	4
LBL576	Affirmative Action and Discriminative Justice (3 Y)	4-1-0	4
LBL577	International Air and Space Law (3 Y)	4-1-0	4
LBL578	Corporate Governance and CSR (3 Y)	4-1-0	4
LBL579	Disaster, Development & Human Rights (3 Y)	4-1-0	4
LBL581	Insurance Law (3 Y)	4-1-0	4
LBL582	Criminal Justice Administration (3 Y)	4-1-0	4
LBL583	Media Law (3 Y)	4-1-0	4
LBL585	Clean Energy & Sustainability Laws (3 Y)	4-1-0	4
LBL584	Health Law (3 Y)	4-1-0	4
LBL586	Science, Technology and Law (3 Y)	4-1-0	4
LBL587	International Trade Law (3 Y)	4-1-0	4
LBL588	International Commercial Arbitration (3 Y)	4-1-0	4
LBL589	Election Laws (3 Y)	4-1-0	4

Course Credit Scheme of Three-Year LL.B Programme (2024 - 2025)

SEM	COURSE 1	COURSE 2	COURSE 3	COURSE 4	COURSE 5	GENERAL PROFICIENCY/ VALUE ADDED COURSES	COMMUNITY SERVICES	TOTAL COURSES	MOOT COURT HRS	L	T	P	Project Work Hours	Contact Hours per week	Credits
I	LBL321 Legal Methods (3 Y) (4-1-0) 4	LBL323 Law of Contract I (3 Y) (4-1-0) 4	LBL325 Law of Torts (3 Y) (4-1-0) 4	LBL327 Law of Crimes I (3 Y) (4-1-0) 4	LBL329 Family Law-I (3 Y) (4-1-0) 4	LBR303 GP-I (3 Y) 1 Credit	LCS303 CS-I (3 Y)	5	5	21	5	0	5	36	21
II	LBL322 Jurisprudence (3 Y) (4-1-0) 4	LBL324 Family Law II (3 Y) (4-1-0) 4	LBL326 Law of Crimes II (3 Y) (4-1-0) 4	LBL328 Environmental Law (3 Y) (4-1-0) 4	LBL332 Law of Contract-II (3 Y) (4-1-0) 4	LBT104 Internship-I (3 Y) (0-0-6) 3	LCS304 CS-II (3 Y) (140 Hours) 2 Credit*	5	5	20	5	0	5	35	25
III	LBL415 Company Law (3 Y) (4-1-0) 4	LBL417 Law of Evidence (3 Y) (4-1-0) 4	LBL419 Constitutional Law-I (3 Y) (4-1-0) 4	LBL423 Public International Law (3 Y) (4-1-0) 4	LBL425 Interpretation of Statutes (3 Y) (4-1-0) 4	LBR403 GP-II (3 Y) 1 Credit	LCS403 CS-III (3 Y)	5	5	21	5	0	5	36	21
IV	LBL416 Property Law (3 Y) (4-1-0) 4	LBC525 ADR (3 Y) (4-1-0) 4	LBL422 Constitutional Law-II (3 Y) (4-1-0) 4	LBL424 Administrative Law (3 Y) (4-1-0) 4	LBL426 Human Rights Law & Practice (3 Y) (4-1-0) 4	LBT204 Internship-II (3 Y) (0-0-6) 3	LCS404 CS-IV (3 Y) (140 Hours) 2 Credit*	5	5	20	5	0	5	35	25
V	LBC523 Drafting, Pleading and Conveyance (3 Y) (4-1-0) 4	LBL513 Labour Law-I (3 Y) (4-1-0) 4	LBL418 Civil Procedure Code (3 Y) (4-1-0) 4	LBL515 Intellectual Property Rights (3 Y) (4-1-0) 4	ELECTIVE I (3 Y) (4-1-0) 4	LBR503 GP-III (3 Y) 1 Credit	LCS503 CS-V (3 Y)	5	5	21	5	0	5	36	21
VI	LBC524 Moot Court (3 Y) (0-0-6) 3	LBL514 Labour Law-II (3 Y) (4-1-0) 4	LBC526 Professional Ethics (3 Y) (4-1-0) 4	ELECTIVE II (3 Y) (4-1-0) 4	LBL516 Law of Taxation (3 Y) (4-1-0) 4	LBL518 Mediation & Conciliation and Arbitration (3 Y) (4-1-0) 4	LCS504 CS-VI (3 Y) (140 Hours) 2 Credit*	6	5	20	5	0	5	35	25
								31	30	123	30	0	30	213	138
								Total Courses	Moot Court Hours	L	T	P	Project Work Hours	Contact Hours per week	Credits

*Students can utilise the entire year including the summer and the winter break for completing 140 community service hours.

Course Credit Scheme of Three-Year LL.B Programme List of Electives (2024 - 2025)

Programme/Specialization Electives		L-T-P	Credits
LBL571	Criminology (3 Y)	4-1-0	4
LBL572	Right to Information and Accountable Governance (3 Y)	4-1-0	4
LBL573	Competition Law (3 Y)	4-1-0	4
LBL574	Food Security Laws (3 Y)	4-1-0	4
LBL576	Penology & Victimology (3 Y)	4-1-0	4
LBL576	Affirmative Action and Discriminative Justice (3 Y)	4-1-0	4
LBL577	International Air and Space Law (3 Y)	4-1-0	4
LBL578	Corporate Governance and CSR (3 Y)	4-1-0	4
LBL579	Disaster, Development & Human Rights (3 Y)	4-1-0	4
LBL581	Insurance Law (3 Y)	4-1-0	4
LBL582	Criminal Justice Administration (3 Y)	4-1-0	4
LBL583	Media Law (3 Y)	4-1-0	4
LBL585	Clean Energy & Sustainability Laws (3 Y)	4-1-0	4
LBL584	Health Law (3 Y)	4-1-0	4
LBL586	Science, Technology and Law (3 Y)	4-1-0	4
LBL587	International Trade Law (3 Y)	4-1-0	4
LBL588	International Commercial Arbitration (3 Y)	4-1-0	4
LBL589	Election Laws (3 Y)	4-1-0	4

Course Credit Scheme of LL.M. (2024 - 2025)

Compulsory Courses		L-T-P	Credits
LML611	Research Methods and Legal Writing	2-1-0	3
LML612	Comparative Public Law	2-1-0	3
LML613	Law and Justice in a Globalized World	2-1-0	3
Specialization Courses			
Specialization 1: Corporate Law		L-T-P	Credits
LML641	SEBI Rules and Practice	2-1-0	3
LML642	International Commercial Arbitration	2-1-0	3
LML643	Corporate Law Practice	2-1-0	3
LML644	International Investment Law	2-1-0	3
LML645	International Trade-Rules and Regulations	2-1-0	3
LML646	Contract Drafting	2-1-0	3
LML647	Corporate Cyber Law	2-1-0	3
LML648	White Collar Crime	2-1-0	3
LML649	Competition Law	2-1-0	3
Specialization 2: Human Rights Law		L-T-P	Credits
LML651	Concept and Development of Human Rights	2-1-0	3
LML652	International Human Rights Law	2-1-0	3
LML653	Disaster Management and Human Rights	2-1-0	3
LML654	Human Rights Law and Practice in India	2-1-0	3
LML655	International Humanitarian law and Refugee Law	2-1-0	3
LML656	Science, Technology and Human Rights	2-1-0	3
Specialization 3: Intellectual Property Rights		L-T-P	Credits
LML661	IPR Regime and Cyber World	2-1-0	3
LML662	International IP Law and Policy	2-1-0	3
LML663	Trademarks and Integrated Circuits	2-1-0	3
LML664	Law of Patents and Pharmacy	2-1-0	3
LML665	Law of Copyright and other Related Rights	2-1-0	3
LML666	Law relating to Geographical Indication, Plant Varieties, and Biodiversity	2-1-0	3
Dissertation		L-T-P	Credits
LMD601	Dissertation	0-0-10	5

Course Credit Scheme of LL.M. (2024 - 2025)

Semester	Course Code/ Course Name			Total Courses	L	T	P	Contact Hours Per Week	Credits
	Specialization Courses								
I	LML611 Research Methods and Legal Writing (2-1-0) 3	LML612 Comparative Public Law (2-1-0) 3	LML613 Law and Justice in a Globalized World (2-1-0) 3	6	12	6	0	18	18
	Specialization (2-1-0) 3								
	Specialization (2-1-0) 3								
II	Specialization (2-1-0) 3	Specialization (2-1-0) 3	LMD601 Dissertation (0-0-10) 5	4	6	3	10	19	14
	Specialization (2-1-0) 3								
				10	18	9	10	37	32
	Total Courses			Total Courses	L	T	P	Contact Hours per week	Credits

Course Credit Scheme of LL.M. (2024 - 2025)

Tracks	Human Rights Law	Corporate Law	Intellectual Property Rights
Specialization Course-1	LML651 Concept & Development of Human Rights (2-1-0) 3	LML641 SEBI Rules and Practice (2-1-0) 3	LML661 IPR Regime and Cyber World (2-1-0) 3
Specialization Course-2	LML652 International Human Rights Law (2-1-0) 3	LML642 International Commercial Arbitration (2-1-0) 3	LML662 International IP Law and Policy (2-1-0) 3
Specialization Course-3	LML653 Disaster Management and Human Rights (2-1-0) 3	LML643 Corporate Law Practice (2-1-0) 3	LML663 Trademark and Integrated Circuits (2-1-0) 3
Specialization Course-4	LML654 Human Rights Law and Practice in India (2-1-0) 3	LML644 International Investment Law (2-1-0) 3	LML664 Law of Patents and Pharmacy (2-1-0) 3
Specialization Course-5	LML655 International Humanitarian law and Refugee Law (2-1-0) 3	LML645 International Trade Rules and Regulations (2-1-0) 3	LML665 Law of Copyright and other Related Rights (2-1-0) 3
Specialization Course-6	LML656 Science, Technology and Human Rights (2-1-0) 3	LML646 Contract Drafting (2-1-0) 3	LML666 Law relating to Geographical Indication, Plant Varieties, and Biodiversity (2-1-0) 3
		LML647 Cyber Corporate Law (2-1-0) 3	
		LML648 White collar Crime (2-1-0) 3	
		LML649 Competition Law (2-1-0) 3	

13. OPEN ELECTIVE COURSES

List of Open Elective Courses Offered (3 Credits) (2024 - 2025)

S.No.	Offered by	Code	Course	L-T-P	Remarks
1	DoMC	BSL338	Marketing in Digital Era	2-0-2	
2	DoMC	BSL354	Workplace Diversity and Inclusion	2-0-2	
3	DoMC	BSL380	Uncovering Music	1-2-0	
4	DoMC	BSL381	Product and Brand Management	2-0-2	
5	DoMC	BSL390	Unveiling Rhythms	1-2-0	
6	DoMC	BSL665	Cross Cultural HRM & Inclusive workplace management	2-0-2	
7	DoMC	CML120	Financial Literacy	2-0-2	
8	DoMC	SML200	Engineering Economics	2-0-2	
9	DoMC	ENL341	Global economic monetary system	2-0-2	
10	DOP	PCL210	Adapting and Thriving through Emotional Intelligence	2-0-2	
11	DOP	PCL310	Self in the new world	2-0-2	
12	CLL	CLL201	Innovative Thinking and Positivity	2-0-2	
13	CLL	CLL360	Introduction to English Literature	3-0-0	
14	APS	MAL251	Vedic Mathematics	3-0-0	
15	APS	MAL252	Mathematical reasoning and Aptitude	3-0-0	
16	APS	MAL253	Engineering Mathematics III	3-0-0	
17	APS	MAL260	Advanced Statistics	3-0-0	
18	APS	MAL280	Linear Algebra & Its Applications	3-0-0	
19	APS	MAL310	Numerical Methods	2-0-2	
20	APS	PYL321	Nanotechnology- Principles And Applications	3-0-2	
21	CSE	CSL263	Advanced Excel	2-0-2	
22	MDE	CEL402	Disaster Management	2-1-0	Only for SOET Students
23	MDE	CEL405	Society and Sustainability	2-1-0	
24	MDE	ECL263	CMOS VLSI Design & Layouts	2-0-4	
25	MDE	ECL352	Design for IoT	2-0-2	
26	MDE	ECL478	Introduction to Industrial4.0 and industrial IOT	2-0-2	
27	MDE	ECL479	Introduction to IOT	2-0-2	
28	MDE	MEL422	Business Agile Project Management	2-0-2	Only for SOET & APS/BCOM/ Maths Background Student
29	MDE	MEL424	Integrated Logistics Strategy and Supply chain Performance Measurement	2-0-2	
30	MDE	MEL470	Product Design and Development	2-0-2	
31	MDE	MEL590N	Waste Management	2-1-0	
32	MDE	MEL611TH	Renewable Energy Sources	2-1-0	Only for SOET / APS Students
33	MDE	MEL613IP	Project Management	2-1-0	Only for SOET & APS/BCOM/ Maths Background Student
34	MDE	MEL630IP	Fundamentals of Supply Chain Management	2-1-0	

NOTE: The above list is tentative and subject to change at the sole discretion of the offering department.

14. MINOR AREA SPECIALISATION

This section outlines the Minor Area Specializations available to students. Each specialization includes a set of courses that provide focused knowledge in a specific area, alongside the main programme. Information about the courses includes course numbers, credits, and L-T-P (Lecture-Tutorial-Practical) structure. Students have the option to choose these courses as a part of their Open Electives. For details on prerequisites or course overlaps, students should consult the respective course coordinator or the Head of the Department/Centre/School/Programme Coordinator. Completion of the required credits in a minor area is mandatory for earning a specialization.

Minor Area Specialization Certification

Department of Multi-Disciplinary Engineering

1. VLSI Design
2. Internet of Things
3. Sustainability
4. Project Management
5. Supply Chain Management

Department of Applied Science

1. Nanotechnology

School of Management & Liberal Studies

1. People Management

School of Law

1. Law & Technology
2. Business Law

Department of Multi-Disciplinary Engineering

COURSE SCHEME (2-0-4) 4 credits - 2 lectures and 4 practical class

Minor area Specialization

1. VLSI Design

Need

- VLSI Design domain has a very high demand and is being promoted greatly by the Government of India since few years.
- Lucrative packages (Starting Salary Package Offered to a UG fresher upto 16LPA) in these industries are a dream of many.
- There is a shortage of skilled persons in this domain. Enhancement of VLSI design skills is the only solution to fill the gap between demand and supply and to make this dream of lucrative packages a reality.
- Department of MDE has been running VLSI Design specialization for BTech ECE students for 5 years.
- As per the admissions trend in NCU, we propose to skill BTech CSE students in VLSI design skills to open up opportunities for these students on VLSI front as well.
- Technical knowledge of VLSI Design along with strong command on programming and data structures will make them good candidates for a VLSI industry.
- Opportunities are increasing for students of CSE background, if they have strong fundamentals of Digital Electronics and preferably have the knowledge of CMOS VLSI/Verilog/ System Verilog etc.

USP & Highlights

- Highest paying industry since years
- Year wise increment is highest among all industries.
- Once entered, the person has Learning /exposure like a private job and Job security like a Govt. job.

NCU Students are getting placed in good VLSI companies in India and abroad at very good packages since more than a decade

Courses Offered

- ECL263 - CMOS VLSI Design & Layouts
- ECL264 - RTL Design & Synthesis
- ECL366 - VLSI Physical Design

2. Internet of Things

Need

- If you think that the internet has changed your life, think again. The Internet of Things is about to change it all over again!" as said Mr. Brendan O'Brien, Chief Architect Co-founder of Aria Systems, clearly sums up the story about the future and rightly explains why all this hype around the Internet of Things.
- The IoT is when everyday products such as refrigerators, watches, speakers and more connect to the internet and to one another. B-Tech CSE with minor in Internet of Things(IoT) offers students with theory and practice to enable them to understand and implement IoT-based applications.
- The curriculum lays the foundation of IOT fundamentals covering all major three distinct stages:
 - Sensors which collect data (including identification and addressing the sensor/device)
 - An application which collects and analyzes this data for further consolidation
 - Decision making and the transmission of data to the decision-making server.
- Analytical engines and Big data may be used for the decision making process.
- With our regular industry-academia interaction, we provide appropriate tools, solutions and recommendations for understanding of Internet of Things (IoT)

USP & Highlights

- Industry-oriented curriculum which enables the students prepare for technical careers in developing IoT applications with emphasis on various sensors, IoT Protocols, cloud infrastructure, performance and security in IoT, Hardware interfacing, kind of distributed system needed to support them.
- IoT design considerations, constraints and interfacing between the physical world and device.
- Integration of Artificial Intelligence, Big Data and IoT concepts to handle more tasks and make autonomous decisions.
- Provides a sound understanding of IoT Cluster network, responsive web design, system to communicate with external hardware and sensors.

- Industry aligned curriculum, designed by Industry Experts.
- Well-trained and qualified faculty.
- Project Guidance & Mentoring by Industry Experts.
- Blended Learning 24 * 7.
- Well Equipped Labs for hands on learning.

Courses Offered

- ECL479 – Introduction to IoT
- ECL481 – Fundamentals of Cloud Computing
- ECL352 – Design for IoT
ECL366 – VLSI Physical Design

3. Sustainability

Need

- Countries have been given targets for NET ZERO CARBON EMISSIONS and have specified strategies to attain sustainability.
- Certification can play an important role in enabling the existing regulatory system to adapt and support innovation.

Under Corporate Social Responsibility (CSR), industries and companies are embedding sustainability concepts in their vision, mission and strategies.

- Companies are aiming for more sustainable designs and it is becoming a mandate to maintain sustainability standard books.
- To fulfil the same, industry need sustainability task force having the basic understanding of these concepts.

USP & Highlights

- This consists of 3 courses of 4 credits each and shall help a student to gain a broader understanding in the area of sustainability beyond the major discipline.
- The three courses can be proposed as an open elective and upon the successful completion of all the three courses, students shall be awarded with a certificate of minor discipline.
- Industry exposure shall be provided through expert sessions.
- Capstone project in collaboration of industry/ Cintana alliance universities.

Courses Offered

- CEL403 – Introduction to Sustainability
- CEL404 – Professional Skills in Sustainability Practices
- CEL405 – Society and Sustainability

4. Project Management

Need

- Project managers is high in demand. 22 million new project management job openings through 2027,
- As Per PMI, Project managers are versatile: IT field, business services, oil and gas, finance and insurance, manufacturing, construction, and utility industries—all over the world.
- High Salaries for project managers are highly competitive.
- According to Glassdoor, the national average entry-level project manager salary is \$59,680. Varied tasks and skills.
- There are plenty of opportunities for advancement. Project managers make a direct impact not only on morale but the company's bottom line.
- In addition to the lucrative salaries, that's a fairly nice reward. Project managers are always learning. For those who embrace change and love seeing what's new.
- Source: www.simplilearn.com

USP & Highlights

- Inventory management: Managing inventory levels is essential to ensuring that a business has the right products available at the right time. Effective supply chain management can help businesses optimize their inventory levels to reduce the risk of stockouts or overstocking.
- Logistics management: Logistics involves the movement of products from suppliers to customers, including transportation, warehousing, and distribution. Effective supply chain management can help businesses optimize their logistics operations to reduce costs and improve delivery times.
- Supplier management: Suppliers are a critical part of any supply chain, and managing relationships with suppliers is essential to ensuring a reliable and consistent supply of products. Effective supply chain management can help businesses select the right

suppliers, negotiate favorable terms, and manage supplier performance.

- Risk management: Supply chain disruptions can have a significant impact on a business, so effective supply chain management involves identifying and managing risks. This can include identifying alternative suppliers, developing contingency plans, and monitoring supply chain performance.
- Customer service: Ultimately, supply chain management is about delivering products to customers. Effective supply chain management can help businesses improve customer service by ensuring that products are delivered on time, in good condition, and with accurate tracking and communication.

Courses Offered

- MEL613-IP - Project Management
- MEL421 - Project Leadership, Strategy and Scope
- MEL422 - Business Agile Project Management

5. Supply Chain Management

Need

- Supply Chain Management (SCM) has grown significantly in recent years due to the globalization of businesses and the need for efficient and effective supply chains.
- In India, the SCM industry is expected to be at 32.5 billion by 2025, and a CAGR of 12.9%, driven by the increasing demand for SCM services from industries such as manufacturing, retail, healthcare, and others [Source: Khatabook].
- Supply Chain Management is the backbone of the Indian economy.
- It is important to build India's Supply Chain Competitiveness [Confederation of Indian Industries (CII)]. Asia's share in the world GDP exceeds that of the European Union & the US.
- Being the fastest-growing economy of the world, over the past 2 years, China & India contributed 73% to Asian growth and 38% to the World GDP growth [Source: Resilient Leadership & Change Masters]. Based on projected GDP growth of 8 percent per annum, the total freight traffic is likely to reach about 5,500 billion tonne km by the year 2025, five times the level in the year 2000.
- The road traffic is expected to multiply five-fold,

carried over a 70,000 km network of National Highways, including 5,000 to 10,000 km of expressways, linking the golden quadrangle of Delhi-Mumbai-Chennai- Kolkata-Delhi as well as northern, southern, eastern and western portions of the country, mostly with four or more lanes.

- Business leaders are yet to implement a robust technology solution in SCM with 85% of them expressed that they struggled with inefficient digital technologies in their supply chains [Source: Amercian Express]

USP & Highlights

- Inventory management: Managing inventory levels is essential to ensuring that a business has the right products available at the right time. Effective supply chain management can help businesses optimize their inventory levels to reduce the risk of stockouts or overstocking.
- Logistics management: Logistics involves the movement of products from suppliers to customers, including transportation, warehousing, and distribution. Effective supply chain management can help businesses optimize their logistics operations to reduce costs and improve delivery times.
- Supplier management: Suppliers are a critical part of any supply chain, and managing relationships with suppliers is essential to ensuring a reliable and consistent supply of products. Effective supply chain management can help businesses select the right suppliers, negotiate favorable terms, and manage supplier performance.
- Risk management: Supply chain disruptions can have a significant impact on a business, so effective supply chain management involves identifying and managing risks. This can include identifying alternative suppliers, developing contingency plans, and monitoring supply chain performance.
- Customer service: Ultimately, supply chain management is about delivering products to customers. Effective supply chain management can help businesses improve customer service by ensuring that products are delivered on time, in good condition, and with accurate tracking and communication.

Courses Offered

- MEL630-IP - Fundamentals of Supply Chain Management

- ii. MEL423 – Advanced Supply Chain Management
- iii. MEL424 – Integrated Logistics Strategy and Supply Chain Performance

Department of Applied Science

COURSE SCHEME (3-0-2) 4 credits – 3 lectures and 2 practical class

Minor area Specialization

1. Nanotechnology

Need

- This module's primary objective is to introduce students to nanoscale science and its ramifications.
- Students from a variety of academic fields will find this session interesting since it will provide them the chance to consider critically how this emerging technology may affect a variety of facets of our life.
- The connections between the basic sciences of physics, chemistry, and molecular biology as well as real-world applications in industries like biotechnology and materials engineering will also be taught to them.

USP & Highlights

- How can we create nano-structures that are 10,000 times smaller than the diameter of a human hair?
- How can we "see" at the nano-scale?
- Through instruction and lab demonstrations, in this course you will obtain a rich understanding of the capabilities of nanotechnology tools, and how to use this equipment for nanoscale fabrication and characterization.

Courses Offered

- i. PYL321 – Nanotechnology – Principles and Application
- ii. PYL322 – Advanced Nanotechnology
- iii. PYL323 – Nanotechnology: Beyond the Basics

School of Management and Liberal Studies

COURSE SCHEME (3-1-0) 4 credits – 3 lectures and 1 tutorial class

Minor area Specialization

1. People Management

Need

- Courses under People Management can help a student develop a strategic approach to leadership, recruitment, training, analysis, managing stress and every other intricacy of HR.
- Moreover, students will gain exposure to the design, process, and execution of such strategies in a global scenario.
- Students will learn about Create, Comprehend, Communicate, Collaborate, and Confront.
- These are the framework for a successful approach to people management.

USP & Highlights

- The courses are industry-oriented and strengthens the standardizing practicalities.
- Cutting Edge Curriculum.
- People Management enables the students to understand all stakeholders.

Courses Offered

- i. PCL332 – Stress Management
- ii. BSL655 – Leadership: Past, Present & Future
- iii. BSL665 – Cross Cultural HRM & Inclusive Workplace Management

School of Management and Liberal Studies

COURSE SCHEME (3-1-0) 4 credits – 3 lectures and 1 tutorial class

Minor area Specialization

1. People Management

Need

- Courses under People Management can help a student develop a strategic approach to leadership, recruitment, training, analysis, managing stress and every other intricacy of HR.
- Moreover, students will gain exposure to the design, process, and execution of such strategies in a global scenario.
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USP & Highlights

- The courses are industry-oriented and strengthens the standardizing practicalities.
- Cutting Edge Curriculum.
- People Management enables the students to understand all stakeholders.

Courses Offered

- PCL332 – Stress Management
- BSL655 – Leadership: Past, Present & Future
- BSL665 – Cross Cultural HRM & Inclusive Workplace Management

School of Law**COURSE SCHEME (3-1-0) 4 credits – 3 lectures and 1 tutorial class****Minor area Specialization****1. Law and Technology****Need**

- The need for interdisciplinary education is captured succinctly in the National Education Policy, 2020.
- The minor specialization is designed to chiefly assist the engineering students to expand their perspective. For instance, whenever a new software or technology is developed it will inevitably raise questions of data capturing and legal principles surrounding it.
- Commercialization of the software would mandate a basic understanding of Intellectual Property legal regime.
- Yet another important aspect of legal compliance is law relating to digital forensics.
- The courses are carefully chosen from three diverse areas of law to namely Constitutional Law, Intellectual Property Rights Law, and Criminal Law.

USP & Highlights

- Inter-disciplinary perspective on law and technology
- The courses are industry-oriented and strengthens the normative foundations
- Cutting Edge Curriculum
- Opportunity to analyse technology policy and know-how from legal perspective.

Courses Offered

- LBL110 – Privacy Law
- LBL120 – Intellectual Property and Technology
- LBL130 – Digital Forensics and Law

2. Business Law**Need**

- The need for interdisciplinary education is captured succinctly in the National Education Policy.
- The minor specialization is bundled to augment the finer legal skills in students to build sustainable businesses.
- Business managers who possess knowledge regarding business laws can tackle a variety of legal issues and make better judgment calls once they understand the crux of the matter.
- They are capable of managing decision making roles on a day-to-day basis without constant help from the legal department.
- It helps managers understand business ethics and how to run an authentic and proper business.

USP & Highlights

- Awareness of legal environment in which businesses operate
- Sounding understanding of legal principles governing contract
- Understanding legal expectations of product and services offered to end-consumers either physically or virtually.
- Enhanced legal competence of students.

Courses Offered

- LBL140 – Law of Contracts
- LBL150 – Competition Law & Practice
- LBL170 – Corporate Law

15. COURSE DESCRIPTIONS

This section provides detailed descriptions of each course offered. The information for every course includes the course number, assigned credits, L-T-P (lecture-tutorial-practical) structure, and an outline of the course content. For additional details such as prerequisites, courses with overlapping content, or other queries, students are advised to contact the course coordinator or the head of the department/centre/school/programme coordinator.

Note: Courses are listed in alphabetical order to facilitate easier searching and navigation.

AEL531 Energy Storage, BMS & BTMS

(4 credits)

Introduction to Energy Storage Overview of energy storage technologies, Importance, and applications of energy storage; Battery Fundamentals: Basic electrochemical principles, Battery components and construction, Battery performance metrics; Battery Chemistry, Lithium-ion batteries (Li-ion), Lead-acid batteries, Nickel-metal hydride batteries (NiMH), Other battery chemistries (optional) Battery Management Systems (BMS), Functions and components of BMS, Battery state-of-charge (SOC) estimation, Battery state-of-health (SOH) estimation, Cell balancing techniques, BMS communication protocols. Battery Thermal Management Systems (BTMS), Importance of thermal management in batteries, Heat generation and dissipation in batteries, BTMS techniques and strategies, Cooling methods (liquid cooling, air cooling, etc.). Battery Pack Design and Integration, Battery pack architecture, Cell arrangement and configuration, Mechanical considerations (packaging, mounting, etc.), Safety considerations (overcurrent protection, thermal protection, etc.). Battery Testing and Characterization, Battery testing methods (capacity, cycle life, impedance, etc.), Performance characterization of battery systems, Failure analysis and troubleshooting. Battery Charging and Discharging Strategies, charging algorithms (constant current, constant voltage, etc.), Discharging considerations and limitations, Fast charging, and rapid charging techniques. Applications of Energy Storage Systems, Grid-scale energy storage, Renewable energy integration, Electric vehicles and transportation, Portable electronics, and consumer devices. Emerging Trends in Energy Storage Advanced battery technologies, Solid-state batteries, Redox flow batteries. Prospects and challenges

AEL532 Advanced Automotive Electronics

(4 credits)

Introduction to Automotive Electronics, Overview of automotive electronics systems, Role of electronics in vehicle control and safety, Automotive electronics development process. Electronic Control Units (ECUs), Types and functions of ECUs (Engine Control Unit, Transmission Control Unit, etc.), Microcontroller architecture and programming, ECU hardware and software integration. Automotive Sensors, Types of sensors used in vehicles (temperature, pressure, position, etc.), Sensor principles and operation, Sensor calibration and signal conditioning, Actuators and Control Systems, Actuator types and functions (fuel injectors, ignition coils, etc.), Actuator control strategies and techniques, Closed-loop control systems in automotive applications. In-Vehicle Communication Networks, CAN (Controller Area Network) bus protocol, LIN (Local Interconnect

Network) bus protocol, FlexRay and Ethernet-based communication systems Automotive Networking Technologies, Introduction to automotive Ethernet and its applications, Automotive communication protocols (CAN FD, LIN, FlexRay, Ethernet), Diagnostics and fault-tolerant communication, Vehicle Connectivity and Infotainment Systems, Introduction to vehicle connectivity (telematics, V2X communication), In-vehicle infotainment (IVI) systems and interfaces, Human-Machine Interface (HMI) design and considerations. Advanced Driver Assistance Systems (ADAS), Overview of ADAS technologies (adaptive cruise control, lane-keeping assist, etc.), Sensor fusion and data integration in ADAS, ADAS control algorithms and safety considerations. Automotive Power Electronics, Power electronic devices in automotive applications (DC-DC converters, inverters), Power management and energy efficiency in electric vehicles, Charging infrastructure and fast charging technologies. Emerging Trends in Automotive Electronics, Autonomous driving and sensor technologies, Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communication, Cybersecurity in automotive electronics.

AEL533 Advanced Vehicle Powertrain

(4 credits)

Introduction to Advanced Vehicle Powertrain, Overview of powertrain components and their functions, Powertrain architecture and configuration Role of powertrain in vehicle performance and efficiency. Internal Combustion Engines (ICE), Review of basic engine operation principles Advanced engine technologies (direct injection, variable valve timing, etc.) Optimization techniques for improved efficiency and emissions reduction Conventional Powertrain Systems, Transmission systems (manual, automatic, continuously variable), Differential and drivetrain components, Powertrain control strategies and calibration, Hybrid Electric Vehicles (HEV), Hybrid powertrain architectures (series, parallel, series-parallel); Energy storage systems (batteries, ultracapacitors), Power management strategies and energy flow control. Electric Powertrains, Electric motor types and characteristics, Battery technologies and energy management systems, Charging infrastructure and strategies, Plug-in Hybrid Electric Vehicles (PHEV), PHEV architectures and operation modes, Battery charging and management systems, Vehicle-to-Grid (V2G) concepts and applications. Fuel Cell Vehicles (FCV), Fuel cell technology and operation principles, Hydrogen storage and delivery systems, FCV powertrain integration and control, Advanced Powertrain Control, Engine control algorithms and strategies, Transmission control systems and shift scheduling, Hybrid powertrain optimization and control techniques. Powertrain Simulation and Modeling, Introduction to powertrain simulation tools (MATLAB/Simulink, GT-Suite, etc.), Modeling of powertrain components and subsystems, Performance evaluation and optimization using simulations. Future

Trends in Vehicle Powertrains, Emerging technologies (autonomous vehicles, connected vehicles), Alternative fuels and energy sources, Powertrain electrification advancements and challenges

AEL534 Advanced Vehicle Dynamics

(4 credits)

Introduction to Vehicle Dynamics, Overview of vehicle dynamics and its significance in vehicle design and performance, Basic terminology and coordinate systems used in vehicle dynamics analysis, Vehicle response to external forces (acceleration, braking, cornering). Tire Mechanics, Tire construction and characteristics, Tire forces and moments, Tire modeling and simulation techniques. Vehicle Suspension Systems, Suspension types (independent, dependent, semi-active, active), Suspension components and their functions, Suspension geometry and kinematics. Vehicle Steering Systems, Steering system components and their functions, Steering system types (rack and pinion, recirculating ball, etc.), Steering system dynamics and control. Braking Systems, Brake system components and their functions, Brake types (disc brakes, drum brakes, regenerative brakes), Braking force distribution and anti-lock braking systems (ABS). Vehicle Ride and Handling, Ride comfort and vibration analysis, Vehicle handling and maneuverability, Analysis of vehicle responses (roll, pitch, yaw). Vehicle Stability and Control, Static and dynamic stability of vehicles, Roll stability control and rollover prevention, electronic stability control (ESC) systems. Handling and Stability Analysis Techniques, Vehicle dynamic modeling and simulation, Linear and nonlinear analysis methods, Handling diagram and steady-state analysis. Vehicle Dynamics Testing and Measurement, Instrumentation and sensors for vehicle dynamics testing, Evaluation of vehicle handling characteristics. Performance testing and data analysis. Advanced Vehicle Dynamics Topics, Vehicle aerodynamics and its impact on vehicle dynamics, Suspension optimization and tuning, Vehicle dynamics considerations in autonomous vehicles.

AEL631 Advanced Quality, Reliability and maintenance Engineering

(4 credits)

Experimental design fundamentals; Statistical concepts; Features of experimentation; Analysis of variance (ANOVA): no-way, one-way, two-way, and three-way ANOVA, Critique of F-test; Some experimental designs: Factorial experiments (2k), role of contrasts, confounding, fractional replication, and other aspects; 2k-p fractional factorial experiments; Response Surface Methodology (RSM). Taguchi philosophy; Loss function; Orthogonal arrays: Steps in designing, conducting, and analyzing an experiment; Parameter and tolerance

design concepts: control and noise factors; Analysis of inner/outer array experiments: signal-to-noise ratio and performance measures; Applications to attribute data.

Estimation, Regression analysis. Interval Estimation procedure for exponential, Gamma, Weibull, Log-normal and Fatigue life models. Point and interval reliability estimation. Testing reliability hypotheses for mean of distribution. Tests for Weibull, distribution, Reliability testing procedure, types of tests, accelerated life tests-parametric and nonparametric methods. Continuously increasing stress tests.

AEL633 Smart Mobility and Data Analytics

(4 credits)

Introduction to Smart Mobility and Data Analytics, Overview of smart mobility concepts and their benefits, Role of data analytics in transportation systems, Challenges, and opportunities in implementing smart mobility solutions. Transportation Data Sources and Collection Methods, Types of transportation data (traffic volume, travel time, vehicle speed, etc.), Data collection techniques (loop detectors, GPS, mobile apps, etc.), Data quality and pre-processing considerations. Data Visualization and Descriptive Analytics, Visual representation of transportation data, Descriptive statistics and exploratory data analysis techniques, Data visualization tools and platforms. Predictive Analytics for Transportation, Regression analysis for travel time prediction, Time series forecasting for traffic volume and congestion prediction. Machine learning algorithms for predicting travel demand and mode choice. Prescriptive Analytics and Decision-Making, Optimization techniques for route planning and traffic signal control, Dynamic traffic assignment models, multi-objective decision-making in transportation systems. Intelligent Transportation Systems (ITS), Overview of ITS technologies and applications, Real-time traffic management systems, Connected vehicle technologies and data integration. Smart City and Urban Mobility, Introduction to smart city concepts and initiatives, Data-driven urban planning and transportation infrastructure design, Mobility-as-a-Service (MaaS) and shared mobility systems. Big Data Analytics for Smart Mobility, Challenges, and opportunities in analysing large-scale transportation data, Scalable data processing frameworks (Hadoop, Spark), Data mining and machine learning techniques for big data analytics. Privacy and Security in Smart Mobility Data, Privacy concerns and data anonymization techniques, Cybersecurity in connected transportation systems, Legal and ethical considerations in handling transportation data. Case Studies and Future Trends, Real-world applications of smart mobility and data analytics, Emerging trends in smart mobility (autonomous vehicles, drones, etc.), Impacts of smart mobility on sustainability and urban planning.

AEL635 Advanced Charging Infrastructure for EV

(4 credits)

Introduction to Electric Vehicle Charging Infrastructure Overview of electric vehicle charging technologies, Role of charging infrastructure in electric vehicle adoption, Charging infrastructure deployment challenges and opportunities. Electric Vehicle Charging Standards and Protocols, CCS (Combined Charging System), CHAdeMO, Tesla Supercharger network AC charging standards (J1772, Type 2, etc.). Charging Infrastructure Components and Architecture, Charging station components (connectors, cables, power electronics, etc.). Types of charging stations (Level 1, Level 2, DC fast charging), Charging station installation and power requirements, Charging Station Communication and Network Management, Communication protocols (OCPP, ISO 15118, etc.), Charging station network management systems, Remote monitoring and control of charging infrastructure, Charging Infrastructure Planning and Design, Site selection and feasibility analysis, Power demand estimation and grid integration, Electrical safety considerations (grounding, protection, etc.), Public Charging Infrastructure, Types of public charging stations (street chargers, parking lot chargers, etc.), Charging infrastructure deployment strategies, Payment and billing systems for public charging, Residential and Workplace Charging, Home charging solutions and installation considerations, Workplace charging policies and incentives, Smart charging and load management for residential charging, Fast Charging and Ultra-Fast Charging, DC fast charging technologies and capabilities, High-power charging systems (150 kW, 350 kW, etc.), Battery and infrastructure considerations for fast charging, Fleet Charging and Depot Management, Charging infrastructure for electric fleets (buses, taxis, delivery vehicles, etc.), Depot charging management systems, Vehicle-to-Grid (V2G) concepts and applications for fleet charging, Emerging Trends in EV Charging Infrastructure, Wireless charging technologies, Vehicle-to-Infrastructure (V2I) integration, Interoperability and roaming agreements.

BCD201 Minor Project

(0-0-6) 3 Credits

In the Motion graphics/3D packshot project, the idea is to give all the students hands-on experience with more practical learning on how to utilise tools in practice on set and work in a team, how to observe a shot as a Motion Graphic or 3D artist, and what tools they need. Students must work in a group and create a Motion graphics/3D packshot project commercial of their chosen product or services. It is beneficial to nurture the students to this extent as it will boost their confidence, discipline, interest, teamwork, and self-learning. Students

would use Chroma Studio, editing software, and various motion graphics / 3D software to deliver the allocated shot. After completing this project, students will have their Motion graphics/3D packshots ready to enhance the content of their portfolios.

BCD 301 Project 1

(0-0-8) 4 Credits

The project will be a design project on a topic suggested by the course coordinator to be completed during the designated duration. It may be of practical and theoretical interest. It has to be done under the guidance of a faculty and students are expected to complete literature survey, feasibility testing, develop or implement the research work.

BCD 302 Project 2

(0-0-12) 6 Credits

The project will be a design project on a topic suggested by the course coordinator to be completed during the designated duration. It may be of practical and theoretical interest. It has to be done under the guidance of a faculty and students are expected to complete literature survey, feasibility testing, develop or implement the research work.

BCL103 Programming Fundamentals – I

(2-0-4) 4 credits

This course introduces the intrinsic concepts of computer fundamentals. It fully covers fundamental programming techniques with the most common library functions and the usage of the preprocessor. It includes Introduction to Computers and Number Systems, Hands-on Pseudocodes, Flowcharts, Algorithms, Introduction to C and Loops in C, Functions, Pointers, Arrays, Strings in C, Structures and File management in C. Students will be able to write the code of a programme by developing logic with progression to writing pseudo codes, designing flowcharts and finally developing management projects.

BCL104 Fundamentals of Programming – II

(2-0-4) 4 credits

Procedural vs. Object-Oriented Programming, Literals, Variables and Identifiers, Operators, Expressions and Data Types, What Is a Control Structure, Boolean Expressions (Conditions), Relational Operators, Membership Operators, Selection Control, Multi-Way Selection, Iterative Control, While Statement, Infinite

loops, Definite vs. Indefinite Loops, Boolean Flags and Indefinite Loops, List Structures, Common List Operations, Tuples , Nested Lists, For Loops , While Loops and Lists (Sequences), Assigning and Copying Lists , Dictionary Type in Python, Set Data Type , Programme Routines , Defining Functions, More on Functions , Calling Value-Returning Functions, Calling Non-Value Returning Functions, Parameter Passing, Arguments in Python Default Arguments in Python, Variable Scope, Recursive Function, Module Specification , Top-Down Design, Developing a Modular Design of the Calendar Year Programme, Object-Oriented Programming concepts, Numpy - Creation on Array ,Array generation from Uniform distribution, Random array generation, reshaping, maximum and minimum, reshaping, Arithmetic operations, Mathematical functions, Bracket Indexing and Selection, Broadcasting, Indexing a 2D array (matrices); Pandas - Creating a Series - from lists, arrays and dictionaries, Find Null Values or Check for Null Values, Reading data from csv, txt, excel, web, Visualization - Installing and setting up visualization libraries, Canvas and Axes, Subplots, Common plots - scatter, histogram, boxplot, Logarithmic scale, Placement of ticks and custom tick labels.

BCL110 Problem Solving and Design

(2-0-2) 3 Credits

This course aims to teach the basics of problem solving and design thinking techniques and its real life applications. It starts with the Introduction to Problem Solving and Design Thinking, Principles of Design Thinking, Applications, Case studies and success stories, Difference between traditional thinking and design thinking approach, Lateral Thinking, Power of visual thinking, Preparing Your Mind for Innovation, Empathy Map, Defining the Problem Statement, Ideation tools, Prototyping, Testing and completes with a capstone project.

BCL201 Data Structures

(2-0-2) 4 credits

The course aims to teach the fundamentals of data structures, their design, implementation and effective use in problem solving approach. With the knowledge of data structures and practical experience in implementing them, students can become much more effective designer and developer. The course will start with the basic introduction of linear as well as non-linear data structures and further proceeds with the programming intensive task of implementing them. This course will also cover basics, arrays, linked lists, stacks, queues, trees graphs, searching and sorting techniques.

BCL202 Computer Networks

(3-0-2) 4 credits

This course is designed to provide a complete overview of computer networking and covers everything from the fundamentals of networking technologies and protocols to practical applications. It includes Network Basics, Topologies, OSI Model, TCP/IP Model, Internetwork devices, Transmission media, Analog/digital signals, Line encoding schemes, Data link layer protocols, error detection and correction techniques, IP addressing, Subnetting concept, Routing protocols, Congestion control, IP datagram, TCP and UDP protocol protocols, DNS, DHCP, ICMP, Email protocols.

BCL203 Database management System

(3-0-2) 4 credits

This course aims to teach fundamentals of database management concepts as well as its implementation. It covers introduction to DBMS and database systems, database design with ER models, relational database model, Normalization of data upto BCNF, relational algebra, transactions and recovery systems.

BCL204 Operating System

(3-0-2) 4 credits

This is an introductory course which briefs LINUX Operating System Concepts that forms an integral part of computer science engineering in development of software applications in many diverse areas, including Web Development, Windows Applications, Research, Analytics and Processing. It lays the foundation of Process Management & Scheduling, Memory Management, Deadlocks and other Operating system Concepts.

BCL205 Digital Electronics & Computer Architecture

(3-0-2) 4 credits

Boolean Algebra, Combinational Circuits, number system, FLOPS, Register Transfer Language, Register Transfer, Bus and Memory Transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic Shift Unit. Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input-Output and Interrupt, addressing modes and instruction formats, hardwired vs. micro programmed programmed control unit. Through put and speed up. Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Direct Memory Access. Memory Hierarchy, Main Memory, Auxiliary Memory,

Associative Memory, Cache Memory, cache size vs block size mapping functions, Virtual Memory.

BCL206 Analysis and Design Algorithms

(3-0-2) 4 credits

This course is an introduction to analysis of algorithms. The course will start with designing and analysis of basic algorithms like sorting and searching and will gradually cover advanced techniques such as dynamic programming and greedy algorithms. It will broadly cover: Role of algorithms in computing, Algorithms as technology, analyzing and designing algorithms, Growth of Functions, Asymptotic notations, Recurrences, Substitution method, Recursion tree method, Master method. General method, binary search, merge sort, quick sort, selection sort, insertion sort. Greedy knapsack problem, job sequencing with deadlines, BFS, DFS, Activity selection problem. Dynamic Programming: General method, Principle of optimality, 0/1- knapsack, General method, 8-queen's problem, Travelling salesperson problem, Introduction to Branch and Bound, LC search and FIFO search, 0/1- knapsack.

BCL211 Game Art Essential

(2-0-4) 4 Credits

This is course students will learn to create 2D and 3D assets essentials for game development with introduction of the skills required to create 3D Models in Industry Standard 3D Software efficiently. Students will learn different methods of modelling and texturing, and how to achieve good topology in a 3D model. Students will have the ability to develop, discuss, and implement from preproduction, to production, Assets for video game Industry. Students will have the skills to model, articulate, and render game requirement. Students will learn professional terms relating to real-time game asset creation.

BCL213 Android and iOS Operating System

(2-0-4) 4 Credits

Introduction to Mobile Operating Systems, Basic Functions of an Operating System, Peripheral Device Management, Data File Management, Memory Management, Process Management, Mobile Operating Systems, Layer 0, Layer 1, Layer 2 , Architecture of Android , Knowing the Operating System of a Mobile Phone, Discontinued Mobile Operating Systems, Existing Mobile Operating Systems, Types of Mobile Operating Systems. Basics Of ANDROID : The Android Platform, Android SDK, Eclipse Installation, Android Installation, Building you First Android application, Understanding

Anatomy of Android Application, Android Manifest file, Android Application Design Essentials: Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions, Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation, Testing Android applications, Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources, Using Common Android APIs: Using Android Data and Storage APIs, Managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying Android Application to the World. Basics of iOS: basic features and functionalities of iOS; Basics of XCode, UIKit Framework, Model View Controller (MVC), Creating and configuring iOS Tables, Dequeuing and reusing iOS Tables, Creating iOS Apps with multiple screens, Using Auto layout and stack views, creating adaptive UI Using Traits and size classes, creating an iOS App Launch storyboard, issues related to accessibility of iOS, the way iOS does multitasking, about Siri and its usage. Introduction to Flutter, Kotlin.

BCL214 Flutter for Mobile App Development

(2-0-4) 4 Credits

Introduction, Installation, Creating simple application in Android studio, Flutter- Architecture Application, Introduction to Dart Programming, Introduction to Widgets, Layout, Gestures, Animation, Writing Android Specific code, Writing iOS code, Package, Accessing RESTAPI, Database concepts, Building layouts: How to build layouts using Flutter's layout mechanism. Adding interactivity to your Flutter app: You'll extend the simple layout app created in "Building Layouts in Flutter" to make an icon tappable. Different ways of managing a widget's state are also discussed. Animations in Flutter: Explains the fundamental classes in the Flutter animation package (controllers, Animatable, curves, listeners, builders), as it guides you through a progression of tween animations using different aspects of the animation APIs. Internationalizing Flutter apps: Learn how to internationalize your Flutter application. A guide through the widgets and classes that enable apps to display their content using the user's language and formatting conventions. Testing, Deployment.

BCL221 UI / UX Design principles

(2-0-4) 4 Credits

The main objective of this Course is to provide a strong foundation in the design of User Interface and User

Experience. Learner will learn how to solve a real-world UI/ UX design problem by using the best practices and conventions. They would learn how to create effective, compelling and navigation-friendly experiences for websites and mobile applications. By the end of this course the students will have the working capability of handling any project from scratch using various UI/ UX methodologies and will also have a full-fledged project in their portfolio. The following important topics will be included in this course: Introduction to UI and UX, Introduction to Internet and www, HTML, CSS and Bootstrap.

BCL222 Fundamentals of Web application development

(2-0-4) 4 Credits

Overview of HTML, CSS and Bootstrap; JavaScript basics, data types; language constructs - conditional, looping construct, function, arrays, methods, exception handling; object oriented concepts - constructors and inheritance; document object model, get input and output, style sheet manipulation using JavaScript, event handling, dynamic web page creation, single page Client-side applications designing, asynchronous programming, API calls, JQuery - JavaScript Object Notation (JSON) client and server object exchange.

BCL303 Introduction to AI & ML

(3-0-2) 4 credits

This course aims to cover introduction to AI and Machine learning techniques. It includes fundamental of AI and machine learning, applications, different machine learning techniques: supervised and unsupervised learning, supervised regression and classification algorithms, unsupervised clustering algorithms, performance analysis of different machine learning algorithms.

BCL305 Software Engineering

(3-0-2) 4 credits

This course helps students to understand about the systematic approach to the development, operation, maintenance, feasibility analysis, designing and requirement of the software. This course would cover different types of SDLC models, agile practices, requirement analysis and specification, designing document, testing techniques, Software maintenance and reuse approach, re-engineering, reverse engineering and project management techniques.

BCL311 Basics of 3D Animation

(2-0-4) 4 Credits

This course students will learn the principles of animation for film and games industry, basics to advance of 3D creation. This course is project based so we will be using the skills we learn along the way to create 3D animations. This course is designed on the essentially a digital successor to the stop motion techniques used in traditional animation with 3D models and frame-by-frame animation of 2D illustrations.

BCL312 Foundation of 2D Game Development

(2-0-4) 4 Credits

This is an introductory course for students will learn how to programme by creating your very own games using Unity3D, an industry-standard programme used by many large gaming studios and indie developers across the world and Master basic game development (produce, test and present a beta version of a game of your own design). Understand game design and apply the concepts for game development. Students will also learn most common languages for game designers to learn are C++ and C# for unity will be able to operate and write Unity based C# programme with Production Work Flow - 3Ds Max to Unity. By the end of the module, students will create a 2D platformer game.

BCL313 Mobile Architecture & Application Development

(2-0-4) 4 Credits

Introduction to Mobile Application, Considerations and Challenges for Mobile App , PC Based Applications, Web Based Applications, Evolution of Mobile Based Apps , Comparison of Mobile App with Web Application, Content and Protocol in Mobility , Trends in Mobility Space, Components of Mobile Application, Architecture of a Mobile Application , Architecture of a native Mobile App , Architecture of a hybrid Mobile App , Architecture of a Mobile Web App, Components of a Mobile Client Application, Components of Mobile Support Infrastructure, End to End Case Study of Android Mobile Architecture, Basics of Mobile application design, Design Considerations and Best Practices, Checklist for Mobile Apps, User Interface Design for Mobile Apps, Power Usage, Synchronization, Patterns and Design Elements, Security Standards and Best Practices, Mobile App Testing.

BCL315 Mobile Security**(2-0-4) 4 Credits**

An introduction to information security, Information systems security issues , Cryptology, block ciphering, block ciphers working modes, Cascade ciphers, modern cryptographic algorithms , Public key cryptography, Digital signature and electronic signature, Data security, Penetration tests, Operation systems security hardening, Communication protection, Protections against data loss or break, Information security policy and strategy , Malicious software and protections against it, Information systems security audit, Communication threats, email protection, Steganology, Mobile Malware, Mail Spams, Ransomware, Malware injection and testing.

BCL321 Fundamentals of Mobile application development**(2-0-4) 4 Credits**

Introduction to Dart, basic data types, Dart language constructs - conditional constructs, looping constructs, function, methods, exception handling; object-oriented concepts - inheritance, abstract class, interface; Dart collection - List, Set and Map. Fundamental Flutter concepts, Stateful and Stateless Widgets, Widget tree, state management, animations, themes, Application Lifecycle, Exceptions and Errors, Interact with Gestures, Working with Multimedia, Database connectivity, Sensor, and hardware API call.

BCL322 Software prototyping, usability & testing**(2-0-4) 4 Credits**

This design-centric course examines the broad question of what an interface is and what role a designer plays in creating a user interface. Learning how to design and articulate meaning using color, type, and imagery is essential to making interfaces function clearly and seamlessly. This is the course brings a design-centric approach to user interface (UI) and user experience (UX) design, and offers practical, skill-based instruction centered around a visual communications perspective, rather than on one focused on marketing or programming alone. This course is ideal for anyone with some experience in graphic or visual design and who would like to build their skill set in UI or UX for app and web design. It would also be ideal for anyone with experience in front- or back-end web development or human-computer interaction and want to sharpen their visual design and analysis skills for UI or UX. This course is focused on the application of the early UX research to actual user interfaces: the creation of wireframes, high-fidelity mockups, and clickable prototypes. This course enhances the skills of the students by not only

by providing usability but also the testing of the User Interface.

BCR 118/119/218/219/318/319 General Proficiency**1 credit/ each semester**

General proficiency evaluation is conducted in each semester where a student will be evaluated for his achievements and participation in extra-curricular activities throughout four years and also for his academic excellence. The evaluation is based on academic performance, co-curricular activities in sports, cultural fest etc., social outreach, general awareness, soft skill development and outstanding achievements.

BCS101/102/201/202/301/302 Community Service**(1-0-2) 2 credits**

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BCT201 Summer Internship-1**4 Credits**

Exposure to the industrial atmosphere and subsequent placement of young graduating students in industries across the country is of the essential today. At the end of semester 4, students are sent to industries of interest areas for 6-8 weeks to have hands on experience and exposure to industrial environment. The students are exposed to the professional environment and learn the technical and behavioral skills. They are continuously monitored by internal faculty supplemented by a visit to the company by the same faculty during their training. At the end of training they are evaluated.

BCT301 Summer Internship-2**4 Credits**

Exposure to the industrial atmosphere and subsequent placement of young graduating students in industries across the country is of the essential today. At the end

of semester 6, students are sent to industries of interest areas for 6-8 weeks to have hands on experience and exposure to industrial environment. The students are exposed to the professional environment and learn the technical and behavioral skills. They are continuously monitored by internal faculty supplemented by a visit to the company by the same faculty during their training. At the end of training they are evaluated.

BCV201 Skill Deveoplement-1

(1-0-2) 2 credits

Python concepts, expressions, values, types, variable, programmes & algorithms, control flow, file I/O, the python execution model, list, set, dictionary (mapping), tuple, graph (from a third party library). List slicing (sublists), list comprehension (shorthand for a loop). Mutable and immutable data structures. Distinctions between identity and (abstract) value, procedural abstraction, function as values, recursion and function design methodology. Data abstraction, modules, objects.

BCV301 Skill Development-2

(1-0-2) 2 credits

Photoshop's interface, crop and resize images, work with color to edit and manipulate images, combine aspects of several images into one professional images, work with layers, paint using Photoshop's many tools, add text to images, create and use gradients, remove objects from images without leaving an empty space, making it look like the image was edited, select objects easier and better way, use of filters to manipulate the look and feel of images.

BSC501 Business Communication

(1-0-0) 1 Credit

This colloquium course on Business Communication is aimed at making participants understand workplace communication in an experiential manner through an activity-based pedagogy. Specifically, the course shall cover aspects of effective communication, overcoming individual barriers and biases in communication, getting to the point in good news and neutral messages, maintaining goodwill in bad news messages, making a case with persuasive messages etc. The course shall cover the various forms of communication – Written, Oral, Non-verbal and Listening. Besides, the course shall hone the report writing skills, ability to make persuasive PPTs, using appropriate visuals to convey a point, storytelling with data etc. Business etiquette, body language, grooming etc. shall also be an integral part of this course.

BSC502 Digital Transformation

(1-0-0) 1 Credit

This colloquium course on Digital Transformation (DT) shall offer an overview of the technology landscape across the industrial eco system, new technology adoption cycle across industries, flagship technologies, pre-requisites for DT, steps to DT, cross leverage of technologies across sectors, public and private policies to further DT and skill base required to support such industries. The course will touch upon legacy technologies - Manual, Mainframe, PC based etc., contemporary technologies - Internet, IoT, Mobile, Web, Cloud etc., Emerging and Next Gen technologies - AI, Block chain, Quantum Computing etc. Further, the course shall demystify digital technologies for a new management student, with limited exposure to the same and prepare them to embrace technologies for competitive growth.

BSC504 Introduction to AI

(1-0-0) 1 Credit

Introduction to AI is a colloquium course that shall be delivered in a workshop format i.e, the sessions shall be predominantly interactive and an activity-based pedagogy shall be used to enable participants gain knowledge on the topic experientially. This introductory course offers MBA students an

essential understanding of General Artificial Intelligence, with a special focus on Language Models and ChatGPT. The course will explore foundational AI concepts, ethical considerations, and practical applications of AI in enhancing day-to-day business operations and decision-making processes.

BSC506 Team Building and Work Ethics

(1-0-0) 1 Credit

Work ethics will focus on the set of moral principles, values and standards of behaviour that guide how individuals approach their Work. Team building will involve activities and strategies designed to enhance social relations, define roles within teams and help improve the team members working together. The course will consist of lecturers, individual and team games and activities.

BSC601 Leadership & Executive Presence

(1-0-0) 1 Credit

This course provides a roadmap to students to execute strategies through leadership. It blends theories and practice so that students understand the theories and connect them to real life situations. The course takes students through a fascinating journey through history,

literature, philosophy apart from management sciences. Through case studies of leaders & Industry titans, role plays & audio visuals, the course gets the students to reflect on leadership. Executive Presence, often called the missing link between merit & success, is about the ability to inspire confidence in others to believe and follow you. Students will be trained in the areas of Gravitas, Communication, Confidence, in-person & online Appearance which helps in commanding respect and admiration from others.

The course, delivered in a hands-on workshop format, presents behavioral models, tools & techniques that students can incorporate in their career to build their executive presence and provide effective leadership to their teams.

BSC602 Introduction to Sustainable Business

(1-0-0) 1 Credit

This colloquium course on Sustainable Business would focus on how a business can operate in a way that is environmentally, socially, and economically responsible. The course will help participants understand how businesses need to focus on long-term goals and integrate sustainability into its core strategies, practices, and values. Through an activity-based pedagogy, participants will understand ESG trends, benefits of diversity and inclusion, challenges and benefits of sustainable business models, strategies for implementing sustainable businesses, measuring and reporting while building and growing sustainable businesses etc.

BSC603 Introduction to Consulting

(1-0-0) 1 Credit

Introduction to Consulting is organized around the core skill of structured problem-solving, which takes participants through various phases of a strategy project: defining the problem, structuring the problem, conducting analysis, developing recommendations, and communicating for impact. These core skills are supplemented with additional sessions on managing strategy projects, working with diverse teams, and influencing skills. The course encompasses specific consulting situations where the participants will be asked for ideas on how he / she would approach such situations. The course is specially designed to challenge the thinking process and make the participants see how instinctive approaches to solving problems often lead them down the wrong paths. Discussions will follow each scenario and reveal specific tools that can be used to address similar situations in real life. Participants will gain tangible, hands-on learning, and key insights in an experiential manner.

BSC604 Global Trends in Management

(1-0-0) 1 Credit

This colloquium course on Global Trends in Management will focus on how businesses continually evolve and how they adapt to new technologies, market conditions, geopolitical scenarios, international relations, global economic conditions and societal expectations. Specifically, the course will focus on trends related to remote and hybrid working, data driven decision making, ever morphing technological landscape, employee wellbeing, agile management, globalization and localization, geopolitical changes, reskilling and upskilling, collaborative leadership styles etc.

BSC606 Legal Framework of Business

(1-0-0) 1 Credit

This colloquium course shall help participants understand the legal framework of business through interactive sessions conducted in a workshop mode. Participants of this course shall gain a basic understanding of the various statutory provisions that confront business managers while taking decisions. A brief introduction to a variety of acts and laws such as the Indian Contract Act, 1872, the Companies Act, 1956, the Partnership Act, 1932, The Negotiable Instruments Act, 1881, Consumer Protection Act, 1986, Competition Act, 2002, IPR etc. shall inform the participants on the broad legal framework in action. On completion of the course, the students would have got exposure to the various legal elements associated with business and would be in a position to appreciate and take legally correct business decisions.

BSD201 Minor Project

4 Credits (0-0-8)

Minor Project is a 3-credit course to be performed by the students of IIIrd semester of all UG programmes to keep them engaged and fresh with theoretical and practical knowledge that they have received in their first and second semester. Minor project shall also be done in a form of "Project on the Job Training". The purpose of this is to bridge the gap between job requirements and the present competency for an employee. The Minor project will be evaluated on the basis of the submitted report, presentation of the report during mid & final evaluation. At the end of the semester a soft bound project report should be submitted to the supervisor.

BSD302 Major Project

6 Credits (0-0-12)

Major project is considered to be a mini-thesis that the

students have to submit to the University. Each student is allotted a faculty guide who acts as a mentor to the student and ensures that the projects reach a sensible conclusion. The students are asked to select a topic of their own interest or alternatively a topic jointly discussed and finalized by him/her and the respective mentor. The students are expected to study literature available on the topic and frame out objectives based on current research gaps for their capstone projects. The faculty guide facilitates the students in identifying the correct measurement tools or methodologies that can be used during their project and in carrying out & executing the research project through its various stages in order to reach a justifiable conclusion.

BSD402 Dissertation-2

8 credits (0-0-16)

This course serves as the culmination of the students' academic journey, allowing them to apply the knowledge, skills, and methodologies acquired throughout their graduate studies to an original research project. By the end of the course, students will be expected to produce a polished dissertation manuscript that demonstrates their ability to conduct rigorous research, contribute new knowledge to their field, and communicate their findings effectively. This course prepares students for the rigors of academic research and serves as a foundational step towards future scholarly endeavors or professional pursuits.

BSD403 Dissertation-1

6 credits (0-0-12)

The Dissertation Project Work course is designed to provide graduate students with the opportunity to undertake independent research and produce substantial scholarly work in their chosen field of study. Students will work closely with a faculty advisor or mentor to develop a research proposal, conduct a thorough literature review, design a research methodology, collect and analyze data, and interpret findings within the context of existing scholarship. Emphasis will be placed on critical thinking, problem-solving, and scholarly communication skills necessary for producing a high-quality dissertation.

BSL101 Entrepreneurship

(2-0-2) 3 credits

This course aims to provide students with an understanding of the nature of enterprise and entrepreneurship and introduces the role of the entrepreneur, innovation and technology in the entrepreneurial process. It is not about small business or life style businesses but instead the development of growth oriented businesses -w h

ether for-profit or not-for-profit. Entrepreneurship is both a way of thinking and of doing. It involves "building something from nothing" and successful entrepreneurs know how to manage and mitigate uncertainty and risk. The course content is relevant to those individuals thinking about starting a business or who are already in business - large or small, those who are interested in commercializing their own innovations or of others, and those who advise entrepreneurs or engage in policy making in the entrepreneurship area. The course provides step by step process of writing a business plan for the operation of a successful small business. The content of the course will include all aspects of start-up of a small business, sales, finance, personnel, marketing, budgets, insurances, customer target and possibly a different alternative to business either start up or purchase of small business.

BSL102/BSL102A Principles of Management

(2-0-2) 3 credits

Management and analysis of basic organizing, leading, directing, and controlling for establishing and accomplishing business objectives, the scope of this study will also include aspects of the principles of management on individuals and organizations. The design of the course includes the basic mechanics business operations; manufacturing, marketing and maintaining financial focus in a rapidly changing and competitive market.

BSL103 Fundamentals of Marketing Management

3 Credits (3-0-0)

This course includes - Defining Marketing for the 21st Century: Marketing Concept and Process; The changing marketing Landscape and Developing Marketing Strategies and Plans: Role of marketing in company's strategic planning; Customer drives marketing strategy and integrated marketing mix; managing the marketing effort. Scanning the Marketing Environment, Forecasting Demand, and Conducting Marketing Research; Creating Customer Value and Customer Relationships; Analyzing Consumer Markets and Analyzing Business Markets. Identifying Market Segments and Targets; Competitive Dynamics; Crafting the Brand Positioning; and Creating Brand Equity. Designing Value: Setting Product Strategy; Designing and Managing Services and Developing Pricing Strategies and Programmes. Delivering Value: Designing and Managing Integrated Marketing Channels and Managing Retailing, Wholesaling, and Logistics. Communicating Value: Designing and Managing Integrated Marketing Communications; Managing Mass Communications; Managing Personal Communications. Creating competitive advantages; marketing in the global environment; managing the

holistic marketing effort; introducing new marketing offerings; social responsibility of marketing.

BSL104 Human Resource Management

3 Credits (3-0-0)

This course includes - Nature and scope of Human Resource Management; Human Resource Planning; Job Analysis - Job description - Job specification; Recruitment and Selection - Types - Interview types and selection process. Employee testing - Importance of Selection - Psychological tests - Other information; Development of Human Resources - Types of training and Executive Development - Performance appraisal - Methods and uses; Maintenance of Human Resource - Motivation and Reward System.- Job evaluation - Compensation - Wage and salary, Incentive patterns - Collective Bargaining - Types and process; Employee problems - Disciplining, Promotion, Transfer and Separations - Employee welfare safety health benefits and services - Industrial Counselling and Intervention Programmes; Participative management - Quality circles - Total quality management - Industrial relations - Employee communication - Human Engineering - Working conditions - Improvement in work environment - International Human Resource Management.

BSL105 Fundamentals of Organizational Behavior

3 Credits (3-0-0)

This course includes - Introduction to Organizational Behavior: Emergence & OB as a Discipline; Reasons for Studying OB; Challenges in OB. Individual behavior and Processes: Values in the Workplace and across work cultures; Ethical Behavior. Personality in Organizations - Determinants, Personality Theories, Traits. Perception, Workplace Attitudes & Ethics, Learning, Emotions and Moods, Job Satisfaction. Motivation and Applied Performance Practices. Stress Management. Group Processes and Team Effectiveness: Decision making and Creativity; Model of Team Effectiveness; Organizational & Team Environment; Team Design Features; Team Diversity Challenges; Team Processes & Problems (Process Losses & Brook's Law and Social Loafing); Self-directed Work-Teams; Virtual Teams; Team Trust; Team Decision Making and; Team Building. Communication, Power & Influence and Conflict management: Communication Channels, Barriers and Process; Cross-cultural and Cross-Gender Communication; Improving Interpersonal Communication through Transactional Analysis; Communicating in Organizational Hierarchies; etc. Thomas Kilmann's Conflict Management's styles. Leadership in Organizational Settings - Different Perspectives. Organizational Structure and Design, Organizational Culture, Climate and Change.

BSL107 Introduction to Managerial Economics

3 credits (3-0-0)

This course explores the economic theories and concepts essential for understanding how firms make strategic choices in a competitive environment. Through case studies, practical examples, and analytical frameworks, students will develop critical thinking skills to address real-world business challenges. Topics covered include demand analysis, production and cost theory, market structures, pricing strategies, game theory, risk analysis, and decision-making under uncertainty.

BSL109 Fundamentals of Business Environment

3 credits (3-0-0)

This course provides a comprehensive understanding of the multifaceted dynamics shaping modern business operations. Divided into five units, it delves into various dimensions crucial for business success in today's globalized landscape.

Students will grasp the foundational concepts of the business environment, including its components, interactions, and significance for organizational strategy and decision-making. The course includes exploring the economic factors influencing businesses, students analyze market structures, macroeconomic indicators, fiscal and monetary policies, trade dynamics, and global economic trends. Also, the course will help students to examine how societal norms, cultural values, demographics, and lifestyle patterns impact consumer behavior, marketing strategies, and organizational practices. Students will evaluate the influence of governmental policies, regulations, political stability, and international relations on business operations, risk management, and strategic planning.

It also addresses green initiatives, emerging technologies, digital transformation, and their implications for businesses.

Through case studies, discussions, and practical applications, students gain insights into navigating the complexities of the business environment to drive innovation, growth, and sustainable development.

BSL201 Operations Management

3 Credits (3-0-0)

This course is an introduction to the concepts, principles, problems, and practices of operations management. Emphasis is on managerial processes for effective operations in both goods-producing and service-rendering organization. Topics include operations strategy, process design, capacity planning, facilities location and design, forecasting, production

scheduling, inventory control, quality assurance, and project management. The topics are integrated using a systems model of the operations of an organization.

BSL203 Human Resource Management

3 Credits (3-0-0)

1) Knowledge of human resource functions, role of an HR expert and changing role of HRM.

2) Develop a basic understand of manpower planning and ability to apply the forecasting techniques for HRP.

3) Procure the knowledge of the recruitment practices followed by the companies and the mode of employee selection, designing training needs.

Understand the importance of Industrial Relations system in India. Effectively analyze the role of expatriate management, HRIS, HR Audit and other recent trends in HRM.

Nature and scope of Human Resource Management; Human Resource Planning; Job Analysis – Job description – Job specification; Recruitment and Selection – Types – Interview types and selection process. Employee testing – Importance of Selection – Psychological tests – Other information; Development of Human Resources – Types of training and Executive Development – Performance appraisal – Methods and uses; Maintenance of Human Resource – Motivation and Reward System.- Job evaluation – Compensation – Wage and salary, Incentive patterns – Collective Bargaining – Types and process; Employee problems – Disciplining, Promotion, Transfer and Separations – Employee welfare safety health benefits and services – Industrial Counselling and Intervention Programmes; Participative management – Quality circles – Total quality management – Industrial relations – Employee communication – Human Engineering – Working conditions – Improvement in work environment – International Human Resource Management.

BSL204 Fundamentals of Consumer Behavior

3 Credits (3-0-0)

This course will include Consumer Demographics, Life Styles, Retailing Implications of Consumer Demographics and Lifestyle, Consumer Profiles, Lifestyle Marketing, Environmental Factors and Individual Factors affecting Consumers. Consumer as an Individual, Motivation, Needs, Goals, Personality, Self and Self Images, Perception, Imagery, Learning, Cues, Response, Reinforcement, Behavioral Learning and Cognitive Learning Theory, Brand Loyalty, Attitude Formation and Change, Shopping Attitudes and Behavior, Consumer Buying Decision Process, Types of Consumer Decision

Making, Impulse Purchases and Customer Loyalty, Group Dynamics and Reference Groups, Family Decision Making, Social Class, Culture, Subculture, Opinion Leadership Process, Diffusions of Innovations, Adoption Process.

BSL205 Fundamentals of Financial Management

(4-0-0) 4 Credits

This course aims to equip the students with the fundamental principles & techniques of financial management concern with acquisition & use of funds by a business firm. The goal of this course is to develop the analytical skills for making corporate investment with regards to financial decisions and risk analysis. An equally important component of this course is its emphasis on developing your critical auditory and erudite writing skills to a level that is commensurate with university standards. The course teaching methodologies will be composed of lectures, homework assignments and a group project. This course will examine the concept of present value, the opportunity cost of capital, discounted cash flow analysis, a consortium of valuation techniques of capital budgeting and risk analysis. The course will also be developing knowledge on the allocation, management and funding of financial resources. Enhancing student's ability in dealing short-term dealing with day-to-day working capital decision; and also, longer-term dealing, which involves major capital investment decisions and raising long-term finance.

BSL207 Introduction to Marketing Management

3 Credits (3-0-0)

- 1) Design marketing mix
- 2) Apply product related concepts like classification of products, product levels, product life cycle, new product development process for marketing a product.
- 3) Design model of service quality to improve service quality
- 4) Use integrated marketing communication mix.

Defining Marketing for the 21st Century: Marketing Concept and Process; The changing marketing Landscape and Developing Marketing Strategies and Plans: Role of marketing in company's strategic planning; Customer drives marketing strategy and integrated marketing mix; managing the marketing effort. Scanning the Marketing Environment, Forecasting Demand, and Conducting Marketing Research; Creating Customer Value and Customer Relationships; Analyzing Consumer Markets and Analyzing Business Markets. Identifying Market Segments and Targets; Competitive

Dynamics; Crafting the Brand Positioning; and Creating Brand Equity. Designing Value: Setting Product Strategy; Designing and Managing Services and Developing Pricing Strategies and Programmes. Delivering Value: Designing and Managing Integrated Marketing Channels and Managing Retailing, Wholesaling, and Logistics. Communicating Value: Designing and Managing Integrated Marketing Communications; Managing Mass Communications; Managing Personal Communications. Creating competitive advantages; marketing in the global environment; managing the holistic marketing effort; introducing new marketing offerings; social responsibility of marketing.

BSL208 Business Research Methods

(3-0-0) 3Credits

The course focuses on the analysis of business problems and the use of scientific research as a problem solving tool. This covers the understanding and application of appropriate research designs, research statistics, the use of computers for data analysis and report writing. In this course, students will learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables, check for the validity and reliability of studies and design research projects.

BSL209 E-Commerce

3 Credits (3-0-0)

This course includes - Present concepts and skills for the strategic use of e-commerce and related information technology from three perspectives: business to consumers, business-to-business, and intra-organizational. Examination of e-commerce in altering the structure of entire industries, and how it affects business processes including electronic transactions, supply chains, decision making and organizational performance.

BSL210 Creative Thinking and Negotiation

3 Credits (3-0-0)

Through this course student identify the difference between creativity and innovation Recognize their own creativity, build their own creative environment, Explain the importance of creativity and innovation in business, apply problem-solving steps and tools, Use individual and group techniques to help generate creative ideas, Implement creative ideas.

BSL211 Business Statistics

3 credits (3-0-0)

Measures of Central tendency, Dispersion (variation) and kurtosis their measures, their characteristics (merits and demerits) and application. Combined Mean and problems on missing figures application- Individual, Discrete and continuous series. Correlation and linear Regression Analysis scatter Diagram, Karl Person's & Rank Correlation Method, Standard Error and Probable Error of Correlation and Significance of Correlation Regression- Difference between Correlation & Regression, Regression lines & their properties and the properties of Regression Coefficients, Explained & Unexplained Variation. Solution of the regression lines and standard error of the estimates of regression. Probability, Random variable, Expectations and probability Distributions, Binomial, Poisson's & Normal Distributions fitting of Distribution and their properties and solution of problems. Central limit theorem.

BSL230 - Organization THEORY Behaviour

3 Credits (2-0-2)

The framework of organization behaviour deal with various OB models and concepts like business communication, organization culture, motivation and reward system, leadership and empowerment, individual and interpersonal group behaviour, team-building, attitudes, values and ethics, learning, personality and perception, multi-cultural and global workforce challenges in today's environment

BSL301 Business Policy and Strategy

3 Credits (3-0-0)

The nature of business planning and strategic management: Key terms of SM. Levels of strategies, Decision making criteria and approaches. Strategic management processes: The SM Model and its limitations. Business vision and mission, Importance and characteristics. Issues in setting the objectives. Environment scanning and SWOT analysis: Environment components, Industry analysis Competitive forces. Competitive analysis:

Porters 5- forces. Formulation of strategies: Business forecasting- Need and steps. Forecasting techniques; Internal analysis, Nature of internal environment, Value chain analysis, Evaluation of key internal factors, financial statements/ratio analysis. Long term objectives and grand strategies Long term objectives. Grand strategies, Integration and diversification, Mergers and acquisition, Turnaround strategies, Analysis of strategies, Portfolio and matrix analysis, SWOT analysis.

BSL302 Leadership

3 Credits (3-0-0)

The course includes concepts pertaining to understanding people leadership, importance of self-awareness and seeing the other's point of view through their lens, making effective choices, building relationships, active listening, building a team, and communicating with people. The course aims to make the students conversant with the concept of leadership and its relevance especially in today's dynamic business environment. Includes theories of leadership, development of leaders and succession planning, building a team, ethics and leadership, and contemporary issues in leadership.

BSL303 International Business

3 Credits (3-0-0)

Import management, Export management International capital management, International trade finance, Foreign trade policy, Communication skills, Foreign-exchange, Trade agreements, International labor laws, Legal aspects, Economic aspects Accounting practices.

BSL304 Investment Management

3 Credits (3-0-0)

This course broadly covers financial instruments, such as equity, fixed income, and derivative securities, as well as key concepts in international finance. It makes use of spreadsheet modeling to implement financial models. It starts with discussing investment theories that concern dealing with risk in general, although equity securities will be our primary focus during this unit. Then proceed to discussing concepts concerning fixed-income securities, such as pricing of these securities, yields, as well as theories about risk concerning the term structure of interest rates. Third unit discusses derivative securities, and here, besides the basics of markets and instruments available, we will spend a great deal of time discussing the pricing of such securities. An application of many of these topics to investing across borders (international finance), as well as a discussion of the different types of risk involved in such investments and how these can be dealt with wraps up the course.

BSL306 Fundamentals of Big Data Analytics

3 Credits (3-0-0)

This course provides a basic introduction to big data and corresponding quantitative research methods. The objective of the course is to familiarize students with big data analysis as a tool for addressing substantive

research questions. The course begins with a basic introduction to big data and discusses what the analysis of these data entails, as well as associated technical, conceptual and ethical challenges. This includes practical exercises to familiarize students with the format of big data. It also provides a first hands-on experience in handling and analyzing large, complex data structures.

BSL307 Fundamentals of Data Mining

3 Credits (3-0-0)

This course provides students with a foundation in basic data mining, data analysis, and predictive modelling concepts and algorithms. Using practical exercises, students will learn data analysis and machine learning techniques for model and knowledge creation through a process of inference, model fitting, or learning from examples. The Data Mining Specialization attempts to teach data mining techniques for both structured data which conform to a clearly defined schema, and unstructured data which exist in the form of natural language text. Specific course topics include: Thinking with Data, Data Mining Process, Business Context of Data Mining, Data Cleaning & Preparation, Data Mining Models: Advance Regression Models, Association Analysis, Classification and Clustering, Decision Trees, Neural Networks, Text Mining, Model Deployment.

BSL308 Data Visualization

3 Credits (2-0-2)

This course will help students understand about data visualization techniques which allow people to use their perception to better understand this data. The goal of this course is to introduce students to data visualization including both the principles and techniques. Students will learn the value of visualization, specific techniques in information visualization and scientific visualization, and how understand how to best leverage visualization methods. Students will also learn to evaluate the effectiveness of visualization designs, and think critically about each design decision, such as choice of color and choice of visual encoding.

BSL309 Digital Media Ethics and Laws

3 credits (3-0-0)

This course will help students "think digitally" about communications law in a constantly changing online environment. It will help them to create new knowledge in the field. The course also leads students through a systematic ethical exploration of major issues in online mass communication in the following areas: investigation, including privacy; data collection, including copyright

and copyleft; presentation, including identity, accuracy, and sponsorship. Philosophical topics covered include application of ethical theory, systematic moral analysis, blameworthy and praiseworthiness, deception, and role-related responsibilities. Students will also articulate standards and conventions to use in the development of Codes of Ethic.

BSL311 Web Design and Development

3 credits (3-0-0)

Curriculum is an introduction to the design, creation, and maintenance of web pages and websites. Students learn how to critically evaluate website quality, learn how to create and maintain quality web pages, learn about web design standards and why they are important, and learn to create and manipulate images. The course progresses from introductory work on web design to a culminating project in which students design and develop real websites.

BSL330- Business Environment

3 Credits (2-0-2)

A glimpse of the business environment will take us through the nature of business and its environment, environmental analysis and forecasting, the economic, political, social, legal, technological and the global environment in detail and its impact on business decisions. In depth it deals with the economic policies of the government, macro-economic factors, regional trade blocks, concepts of FDI, globalization, MNC, monetary and fiscal policy, financial market structures, Stock exchange and its regulations, Business ethics and social responsibility, political institutions, The constitution of India, Indian Company Law, Patents and Trademarks, Labour legislations, Regulation of trade practices and foreign exchange with relevant case studies.

BSL335- MARKETING OF SERVICES

3 Credits (2-0-2)

Introduction to Services- What are services, Why service marketing, Difference in goods and service in marketing, Myths about services, Concept of service marketing triangle, Service marketing mix, GAP models of service quality, Consumer Behavior in Services, Consumer behavior in services: Search, Experience and Credence property, Customer expectation of services, Service Development- Service design and positioning - New service development - types, stages. Service blue printing- Using & reading blue prints, Service People- Employee role in service designing: Importance of service employee, Boundary spanning roles, Emotional labor, Customers role in service delivery- Importance of

customer & customers role in service delivery, Strategies for enhancing- Customer participation, Delivery through intermediaries- Key intermediaries for service delivery, Intermediary control strategies, Types of service scape, Role of service scape, Frame work for understand service scape & its effect on behavior, Guidance for physical evidence strategies

BSL331 Customer Relationship Management

3 credits(3-0-0)

Fundamentals of CRM, CRM strategy, CRM vision, CRM Process, marketing metrics, customer profiling, assessing customer value(e.g., RFM, LTV and other analyses), assessing customer profitability. Customer acquisition tools, Measuring and improving customer loyalty, media allocation, distribution channels and marketing campaign management. Several advanced statistical techniques will be introduced including: linear regression, logit, decision trees, lift charts, hazard models and linear programming. CRM Technology: In keeping with the hands-on nature of the course, students will be instructed on how to implement the CRM techniques using industry-standard software. Individual customer approach and the role of technology in CRM.

BSL332 Management of Sales and Distribution

3 credits (3-0-0)

Manage sales and channel teams for different types of selling, with the purpose of enhancing value-based output and productivity; concept and effect of sales organization and sales effort, sales process, the relationship between sales and marketing, sales force structure, customer relationship management (CRM), use of technology to improve sales force effectiveness, and issues in recruiting, selecting, training, motivating, compensating and retaining salespeople.

BSL333 Marketing & Consumer Analytics

3 credits (3-0-0)

This course introduces the students to the tools to measure brand and customer assets, perform regression analysis, and design experiments as a way to evaluate and optimize marketing campaigns. This course is ideal for learners who want to grow their knowledge, develop their career portfolio, and improve the effectiveness of their marketing campaigns. The broad areas covered are resource allocation, product management: segmentation, conjoint analysis, marketing mix allocation, customer management: customer profits and retention using logistic regression, cross selling and optimization, digital marketing.

BSL334 Fundamentals of Retail Management**3 credits (3-0-0)**

The course is designed to provide an in-depth understanding of the retail marketing, building sustainable relationships, decision making skills related to retailing, buyer's behavior, pricing strategies and delivery channels to the end users. Its contents include, Basic Concepts: Definition, Importance and scope of Retailing; The Retail Scenario in India; Retail Formats. Information Gathering in Retailing: Retail Strategic Planning and Operation Management; Retail Financial Strategy; Target Market Selection and Retail Location; Store Design and Layout; Visual Merchandising and Displays. Merchandise Planning, Buying and Handling, Customer Relationship Management. Retail Management Information Systems: Online Retailing; Global Retailing; Legal and Ethical Issues.

BSL335 Marketing of Services**3 credits (3-0-0)**

Students examine the important issues facing service providers and the successful implementation of a customer focus in service-based businesses. Topics include an overview of services marketing; understanding the customer in services marketing; standardizing and aligning the delivery of services; the people who deliver and perform services; managing demand and capacity; and promotion and pricing strategies in services marketing.

BSL336 Advertising and Promotion**3 credits (3-0-0)**

Advertising and Promotions have assumed one of the central roles in marketing communications. This course examines the role of advertising in how brands are built and managed. Particular emphasis is placed on students' understanding of the link between effective advertising and promotions for brand success that will improve managerial decision-making with respect to brands. Among other issues, this course will capture advertising and promotion methods and techniques, brand equity, managing brands over time and across geographic boundaries, and the application of the marketing mix to support brand strategies.

BSL337 Fundamentals of Strategic Marketing**3 credits (3-0-0)**

The course examines the development and implementation of marketing strategy by providing a framework from which to identify and evaluate

strategic options and programmes. Topics: forecasting and contextual possibilities, product-market definition, relationships with channels of distribution, relationships with customers, competitive analysis, financial models for marketing strategists, portfolio models, strategic assessment of offerings, marketing strategy implementation systems. This course requires that students have a strong foundation of marketing knowledge gained from Introduction to Marketing (in particular a knowledge of market segmentation).

BSL338 Marketing in Digital Era**3 credits (2-0-2)**

This course provides learners the ability to formulate and enact intelligent, data-driven marketing strategies. Core content will focus on identifying and understanding digital marketing metrics to gauge success of both social media and traditional digital marketing efforts.

BSL339 Recruitment and Selection**3 credits (3-0-0)**

Recruitment Challenges: How to make recruitment efforts succeed, Workers Expectations - Recruitment Sources, Proactive and Reactive Recruitment, Innovative Recruitment Sources, Electronic Recruitment, Reference Check, Guidelines for Releasing and Obtaining Information. Ability Tests: Mental Ability, Effects of Practice and Coaching, Mechanical Ability Test, Personality Measurement Test, Personality Assessment. International Recruitment & selection Practices.

BSL340 Performance and Competency Management**3 credits (3-0-0)**

Performance appraisal system implementation: Defining performance, determinants of performance, performance dimensions, approaches to measuring performance, Conducting Staff Appraisals: Introduction, need, skills required, the role of the appraiser, job description & job specification, appraisal methods, raters errors, data collection, conducting an appraisal interview, Performance Consulting: Concept, the need for performance consulting, role of the performance consulting, Concept and Definition of Role and Competency, Characteristics of Competency, Competency Versus Competence, Performance Versus Competency.

BSL341 Employee Training and Development**3 credits (3-0-0)**

Study the concepts and processes of training and development (T&D). principles and process of training and development; develop an understanding of how to assess training needs and design training programmes in an organizational setting; to familiarize learners with the levels, tools and techniques involved in evaluation of training Effectiveness and; to develop an understanding on various training and non-training solutions to improve employee performance.

BSL342 Industrial Relations and Labor Laws**3 credits (3-0-0)**

Introduction to Industrial Relations and origin of Labor Laws. It covers topics like Collective bargaining, Health and Safety, Social Security measures. Major Laws related to factories like The Factories Act, 1948, Industrial Disputes Act, 1947, Trade Unions Act, 1923, Payment of Wages Act, 1936. Other areas like equal remuneration, provident fund, gratuity, ESI, Standing Orders Act are covered.

BSL343 Compensation and Reward Management**3 credits (3-0-0)**

The course starts with a brief introduction to factors affecting compensation, theory of wages, role of different parties contributing to the compensation system. Role of performance appraisal in compensation system, team-based pay, merit pay, legislations affecting compensation systems, salary progressions, designing the salary structure of top middle and lower management. Designing incentives and benefit programmes.

BSL344 Organization Change and Development**3 credits (3-0-0)**

Organizational Change and Development (OCD) is a field of research, theory, and practice dedicated to expanding the knowledge and effectiveness of people to accomplish more successful organizational change and performance. The course shall enable the students to understand the philosophical, historical, theoretical, political and practical underpinnings of Organization change and development as a core area of practice within HRD; increase awareness of different tools that are used to diagnose organizations as well as interventions used through hands-on experience and; enhance skills in facilitation, OD skills, group process, communication, and collaboration. Main topics shall include: introduction to organization development; the

nature of planned change; the od practioner; entering and contracting; diagnosing organizations, groups and jobs - collecting and feeding information; designing individual, group and organizational level interventions; strategic change interventions; action research; etc. At the end of the course, the students shall have basic theoretical and competency base in OD that they will need to be able to assist with and facilitate positive, planned change efforts within the organizations in which they work.

BSL345 Cross Culture HRM**3 credits (3-0-0)**

Recent definitions concern IHRM with activities of how MNCs manage their geographically decentralized employees in order to develop their HR resources for competitive advantage, both locally and globally. The role and functions of IHRM, the relationship between subsidiaries and headquarters, and the policies and practices are considered in this more strategic approach. IHRM is also defined as a collection of policies and practices that a multinational enterprise uses to manage local and non-local employees it has in countries other than their home countries.

BSL346 Fundamentals of Strategic HRM**3 credits (3-0-0)**

Through a sequence of readings, lectures, cases, and experiential exercises, this course will introduce students to strategic human resource management. The course focuses on developing a strategic approach to topics such as recruitment & selection, performance appraisal, measuring employee behaviors, outsourcing, and strategic integration. The students will prepare foremost classes by completing assigned readings, including readings of business cases.

BSL347 Financial Reporting and Analysis**3 credits (3-0-0)**

Accounting is the language of business. It attempts to measure and report corporate performance. Managers use accounting in making decisions; while investors use it for valuing stocks. The bankers and lender rely on accounting information to decide to whether to lend money to business. The accounting information is also crucial in evaluating the performance of employees at various levels in an organization. Thus, it is very important for a business executive to have a fair knowledge of accounting.

BSL348 Introduction to Financial Institutions and Market**3 credits (3-0-0)**

This course includes the organization, management and regulation of financial service providers. It provides awareness about the regulatory framework in which the financial service industry operates. Financial instruments at the disposal of the industry and on their specific use at the hand of financial service providers have also been incorporated in this course. It also considers how recent developments, including technological advances and economic globalization, have instilled renewed interest in activities such as acquisitions and mergers, and contemplates the future of the industry. Topics include Non-Banking Financial Services, Insurance Services, Merchant Banking, Credit Rating Services, Factoring and Forfeiting, Venture Capital, Plastic Money (Credit cards), Lease & Hire Purchasing, Housing Finance

BSL349 Insurance and Risk Management**3 credits (3-0-0)**

Concept of Risk, Types of Risk, Risk Appraisal, Transfer and Pooling of Risks, Concept of Insurable Risk. Introduction to Insurance and its Types. Concept of Insurance, Relevance of Insurance to the emerging socio-economic needs of all the sections of society including Industrial sector, Types of Insurance Organizations, Insurance Business, Intermediaries in Insurance Business. : Formation of Contracts. Formation of Insurance Contract, Life, Fire, Marine and Motor Insurance Contracts, Principles of Insurance: Utmost Good Faith, Indemnity, Insurable Interest Classification of Insurance. Classification of Insurance: Life, Non-Life (general), Health, Pension, Social Security and Retirement Benefits, Insurance Products.

BSL350 Fundamentals of Money and Banking**3 credits (3-0-0)**

The objective of this course is to enable the student to gain a thorough understanding of the business of modern commercial banking. Topics include: functions of a bank in the economy, financial statements of a bank and measurement of profitability via ratios, bank lending policies and procedures and lending regulations, investment function in banking, asset liquidity management, reserve requirements, estimating a bank's liquidity needs, bank sources of funds: deposits, non-deposit liabilities, and equity.

BSL351 Introduction to Portfolio Management**3 credits (3-0-0)**

Portfolio management presents the best investment plan to the individuals as per their income, budget, age, and ability to undertake risks. Portfolio management minimizes the risks involved in investing and increases the chance of making profits. One proven way to spread risk comfortably throughout your portfolio is to make sure you sufficiently diversify your investments. However, it remains a vital strategy for minimizing the risk that often helps investors to achieve their financial goals. The main topics to be addressed in this course are portfolio construction, Markowitz model, the Sharpe Index model, capital asset pricing theory, arbitrage pricing theory, portfolio evaluation, and revision.

BSL352 Microfinance in India**3 credits (3-0-0)**

This course will introduce students the concept of Micro credit and Micro finance. Features and Benefits of Micro Finance. Important role of Micro Finance and why it is needed. Micro Finance refers to the provision of affordable financial services such as small loans, small savings, micro insurance and funds transfer facilities extended to socially and economically poor and disadvantaged segments of the society to enable them to increase their income levels and improve standard of living. The main aim of microfinance is to provide small loans to poor people particularly living below poverty line, who are not able to raise loan for productive purposes from other sources and to improve their standard of living by increasing their earning and saving covering associated risks.

BSL353 Cost and Management Accounting**3 credits (3-0-0)**

Cost and Management accounting: Meaning, nature, scope and functions of cost and management accounting, role of management accounting in decision making. Financial statements: meaning, limitations of financial statements, objectives and methods of financial statements analysis, ratio analysis, classification of ratios – profitability ratios, turnover ratios and financial ratios, advantages of ratio analysis, limitations of accounting ratios. Fund flow statement, Cash flow statement (As per Indian accounting standard-3).

BSL354 Workplace Diversity and Inclusion**3 Credits (2-0-2)**

This course examines the effect diversity has in the modern workplace both domestically and internationally. The focus is on issues related to cultural, racial, ethnic, religious, linguistic, physical, gender, and age differences, among others. Students will analyse and gain an appreciation for diverse demographics and the meaning and dimensions of diversity in the workplace and examine the implications and impact of ethics and social responsibility of managing a diverse workforce. The course shall enable students to investigate the diverse demographics and the meaning of diversity in today's workplace; analyze the implications and impact of social responsibility when managing a diverse workforce; evaluate, and critique the implications of stereotyping, prejudice and workplace discrimination; assess workplace challenges and opportunities when creating inclusive corporate cultures and; apply course learning to student's organization and personal work environment.

BSL357 Fundamentals of Econometrics**3 Credits (3-0-0)**

The objective of this course is to provide the basic knowledge of econometrics that is essential equipment for any serious economist or social scientist, to a level where the participant would be competent to continue with the study of the subject in a graduate programme. While the course is ambitious in terms of its coverage of technical topics, equal importance is attached to the development of an intuitive understanding of the material that will allow these skills to be utilized effectively and creatively, and to give participants the foundation for understanding specialized applications through self-study with confidence when needed.

BSL359 Fundamentals of Predictive Modelling**3 Credits (2-0-2)**

In this course, students are introduced to predictive modeling methods, approaches, and tools. Students develop skills in predictive analytics that will allow them to: (1) develop and use advanced predictive analytics methods; (2) develop expertise in the use of popular tools and software for predictive analytics; (3) learn how to develop predictive analytics questions, identify and select the most appropriate predictive analytics methods and tools, apply these methods to answer the respective questions and presenting data-driven solutions.

BSL362 Social Media and Web Analytics**3 credits (3-0-0)**

Social media not only provides marketers with a means of communicating with their customers, but also a way to better understand their customers. Viewing consumers' social media activity as the "voice of the consumer," this session exposes learners to the analytic methods that can be used to convert social media data to marketing insights. In Introduction to Social Media Analytics, learners will be exposed to both the benefits and limitations of relying on social media data compared to traditional methods of marketing research. This course will examine topics in social data analysis, including influence and centrality in social media, information diffusion on networks, topic modeling and sentiment analysis, identifying social bots, and predicting behavior.

BSL363 Financial Analytics**3 Credits (3-0-0)**

Financial Analytics explores the use of quantitative methods and data analysis techniques to interpret financial data, identify trends, and make informed decisions in the realm of finance. This course delves into various topics such as financial modeling, risk assessment, portfolio management, and predictive analytics. Students will learn to utilize statistical tools, programming languages, and software applications to analyze financial markets, evaluate investment opportunities, and optimize financial strategies. Through hands-on projects and case studies, participants develop proficiency in leveraging data-driven insights to navigate complex financial landscapes and enhance decision-making processes for individuals, corporations, and financial institutions.

BSL365 Content Development and Marketing**3 credits (3-0-0)**

Content marketing is a strategic tactic that focuses on the creation of content to help further an organization's brand. It focuses on the designing of content that is useful for a clearly defined target audience, which attracts and retains customers loyal to an organization's brand, and ultimately driving the organization's profitability. This course presents you to the concepts of content marketing and helps you develop the skills needed to develop and execute a successful content marketing plan.

BSL366 Design Thinking and Innovation**3 Credits (3-0-0)**

Today innovation is everyone's business. Whether you are a manager in a global corporation, an entrepreneur starting up, in a government role, or a teacher in an elementary school, everyone is expected to get lean – to do better with less. And that is why we all need design thinking. At every level in every kind of organization, design thinking provides the tools you need to become an innovative thinker and uncover creative opportunities that are there – you're just not seeing them yet. In this course, we provide an overview of design thinking and work with a model containing four key questions and several tools to help you understand design thinking as a problem-solving approach. We also look at several stories from different organizations that used design thinking to uncover compelling solutions.

BSL367 Digital Analytics and Campaign Planning**3 credits (3-0-0)**

Students will learn various digital analytics tools and apply them to realistically create and manage an integrated digital marketing campaign for a client. It will help students learn to set digital campaign goals, choose apt digital media, target audiences, create campaigns, run it, monitor it, make changes and make post campaign reports. Students will participate in various online marketing events and run a live digital campaign for a client across search, display and social platforms.

BSL368 Digital Futures**(2-0-2) 3 Credits**

The course will introduce the students on the multidimensional impact of digital technology as a catalyst for change and how it is changing the human experience. The course will also explore the different theoretical frameworks which can be utilized to examine the impact of digital and the multiple possible pathways of socio-cultural change. Thus, this course consolidates students' understanding of how new technologies interact with existing technologically and socially structured environments through exploring how a workbased context might respond to the transformative shifts brought about by the emergence of a new disruptive technology.

BSL369 Digital Media Planning and Management**3 credits (3-0-0)**

The course delves into the domain of digital media

planning and management in the light of social media. The course introduces students to topics such as media management, marketing, planning, brand design and its strategies and practical techniques. Theoretical and field researches realized in the form of the lectures help students to establish their digital media planning and management background. They also develop skills of designing digital media projects and learn how to plan and manage in current social media environment.

BSL373 Mobile Marketing**3 credits (3-0-0)**

Consumers are using their mobile device 24/7 and marketers are attempting to capitalize on this technology. Mobile marketing gives consumers with just-in-time, personalized information about goods and services and related promotions. While going through the course, students will delve into the rapidly evolving mobile market and how companies are using mobile marketing to develop their marketing strategies and engage with consumers anywhere and anytime.

BSL376 Fundamentals of Family Business**3 Credits (3-0-0)**

This Course provides an overview on how to organize a family business by setting expectations and defining roles as well as differentiating between business and family life. The course provides the detailed focus on governance and ownership issues including how to set business controls and how to manage shareholder arrangements for new as well as for the existing business. The course covers the details on how family businesses are different, what makes them different and how to effectively manage these differences. Challenges arising from the tension between family and business pressures from governance, management and succession planning perspectives.

BSL377 Social Entrepreneurship**3 Credits (3-0-0)**

Social Entrepreneurship describes the discovery and sustainable exploitation of opportunities to create social change. Social entrepreneurs are gaining international attention motivated by the desire for change and to see the world as it can be, not as it is. Students in the course will learn how social entrepreneurs have developed creative solutions to address social problems. They will understand the role of measuring impact and how to quantify the social impact for investors, donors, and beneficiaries to help ensure that scarce resources are utilized appropriately. The intention of the

course is to develop knowledge, appreciate the role of social entrepreneurs that create social change, deepen students' understanding of the world around them, and to inspire them to use their skills and knowledge to be a change.

BSL378 Entrepreneurial Marketing

3 Credits (3-0-0)

Entrepreneurial marketing is a crucial concept for identifying and exploiting of opportunities to acquire and retain the profitable customers in the competitive era. This course will take learners on an excursion where they will gain knowledge of different marketing concepts and strategies needed for being a successful entrepreneur in the market. This course provides productive information related to entrepreneurs, like competitor analysis, marketing opportunity analysis & strategies, pricing, branding, social marketing and scaling of venture for a sustainable entrepreneurship.

BSL379 SME Financing

3 Credits (3-0-0)

The SME Financing course prepares students to be competent in entrepreneurship and corporate finance management skills. The course focuses on specific financial planning and financial decision-making needs of entrepreneurial ventures, including start up and development phase financial and management problems.

BSL380 Uncovering Music

3 Credits (1-2-0)

This course has been designed to empower the students in the field of music covering vocal and instrumental music and will develop the foundation for long term certification courses in the field. This course will provide formal training to the students in their respective areas of interest, such as, vocal, guitar, piano, keyboard, percussion etc. from the basic level and equip them with the skill to apply the concepts for advanced level of learning, to be eligible to enrol for various formal certification courses in music.

This course will include comprehensive coverage of the elements in music and arts in a synchronized way and all those additional and relevant skill of higher level that are taught at this age.

BSL381 Product and Brand Management

3 credits (3-0-0)

This course facilitates learners to understand product portfolio and strategies for building and managing any product as a sustainable brand in the marketplace. This course includes several concepts, like product planning, design thinking, new product development, the significance of brand management, understanding brand equity and managing the brand over time. The course structure is designed in such a way by which, learners will gain knowledge of various aspects and strategies under product and brand management.

BSL382 Marketing Communication

3 credits (3-0-0)

Marketing communication is an essential concept for promoting any product or service brand. This course is designed to familiarise the learners with essential concepts and models for executing prolific integrated marketing communication programmes. The course of marketing communication will help learners to boost their understanding for the development of marketing communication programmes to acquire and retain customers by enhancing their loyalty towards the brand. Main topics include the role of integrated marketing communications, organising for advertising and promotion, consumer behaviour perspective, the communication process, promotional objectives and budgets, creative strategy, media planning and strategy, broadcast/print and support media, direct marketing, sales promotions, PR and publicity, personal selling, international promotion, business-to-business promotions, and regulations and ethics.

BSL383 B2B Marketing

3 Credits (3-0-0)

This course explores the challenges in the marketplace by delving into unique problems confronting Business-to-Business Markets today across a broad spectrum of organizations ranging from the traditional industries to high-tech enterprises. It has been specially customized to meet the specific requirements of entrepreneurs by raising intriguing questions, debating options and possible alternatives based on the challenges faced on a daily basis. While the basic tenets of consumer marketing are equally applicable to B2B, there are some unique characteristics in Business Markets that demand special attention: Forces that affect Business Demand, Composition of Business Markets, Nature of Business Buyers, Buying Decision Making Process, Pricing Strategies, Role of Promotion, Advertising and Branding. The marketplace is also undergoing constant change - markets are commoditizing, customer firms

are consolidating, companies are becoming global, and technology is transforming the business environment.

BSL384 Human Resource Management in Family Business

3 Credits (3-0-0)

Family businesses are a universal phenomenon and so too are their challenges. While human resources (HR) and talent management are of utmost importance to all firms, the unique interplay of 'family' and 'business' systems means family businesses experience multiple, complex, and interrelated issues. However, any family business, of any significant size, is reliant on the quality and effectiveness of family and non-family talent to ensure continued success and growth. HR is even more important in a family business than in a non-family business. HRM in the area of family business is focused on topics of successor development, estate planning, family relationships, wealth transfer, and, succession.

BSL385 Formulating Business Plan

3 Credits (3-0-0)

Every business needs a business plan--a plan to meet the expected and unexpected opportunities and obstacles the future holds. The course of business plan will help students in discovering entrepreneurial opportunities and provides an overview of macro and micro factors that stimulates business decisions. It will also entail competitive advantage of small businesses and Paths to Small Business Ownership . This will further help students in preparing te New Venture Business Plan and developing the details of the business plan. It provides understanding in finding sources of financing and thereby Preparing a targeted presentation and Preparing a targeted pitch for a business to present in front of investors. Entrepreneurial skills are not only necessary for self start ups but they also develop an independent thinking among students which will certainly help them in achieving higher positions.

BSL390 Unveiling Rhythms

3 credits (1-2-0)

This course has been designed to empower the students in the field of advance music covering vocal and instrumental music. This course will provide advance training to the students in their respective areas of interest, such as, vocal, guitar, piano, keyboard, percussion etc. from the advance level, to be eligible to enrol for various formal certification courses in music.

BSL391 Systems Thinking

3 Credits (3-0-0)

Systems thinking is a way of helping a person to view systems from a broad perspective that includes seeing overall structures, patterns and cycles in systems, rather than seeing only specific events in the system. This broad view can help one to quickly identify the real causes of issues in organizations and know just where to work to address them. This course on systems thinking introduces students to systems thinking, systems modelling techniques, and how these are used in addressing sustainability. Systems thinking aids in understanding the complexity and interconnectedness that makes many real-life situations difficult to manage. It is about understanding an issue by analysing the whole, rather than the parts. It acknowledges that, as parts interact, their combined output can be both synergistic and emergent, making analysis of the parts independently insufficient for addressing sustainability. On completion of the course, students will be able to define the systems, thinking perspective and language; explain the systems thinking process; identify and apply several systems thinking approaches; analyse how systems evolve; compare the study of individual components to the analysis of entire systems; and; evaluate how system level thinking informs decision-making, public policy, and/or the sustainability of the system itself. Brief content of the course: system philosophy, theory, methodology and systems practice.

BSL392 Workplace Diversity and Inclusion

3 credits (3-0-0)

This course examines the effect diversity has in the modern workplace both domestically and internationally. The focus is on issues related to cultural, racial, ethnic, religious, linguistic, physical, gender, and age differences, among others. Students will analyse and gain an appreciation for diverse demographics and the meaning and dimensions of diversity in the workplace and examine the implications and impact of ethics and social responsibility of managing a diverse workforce. The course shall enable students to investigate the diverse demographics and the meaning of diversity in today's workplace; analyze the implications and impact of social responsibility when managing a diverse workforce; evaluate, and critique the implications of stereotyping, prejudice and workplace discrimination; assess workplace challenges and opportunities when creating inclusive corporate cultures and; apply course learning to student's organization and personal work environment. Brief content: multiculturalism, basics and concepts in diversity and inclusion; diversity dimensions viz., gender, age, religion, socio-economic factors, LGBTQ, etc.; multigeneration diversity at the workplace; diversity in VUCA world; diversity in different organizations; diversity programme management; issues

of justice around workplace diversity; leadership and diversity; organizational biases; workplace equity; future issues in workplace diversity and inclusion; and; strategic management of diversity.

BSL401 Technical Writing

4 credits (4-0-0)

Technical Writing is a comprehensive course designed to enhance students' proficiency in scholarly writing. Through a blend of theoretical concepts and practical exercises, participants will develop critical skills in research, analysis, and effective communication. Topics include thesis development, citation techniques, structuring arguments, and clarity in expression. Students will engage in hands-on activities to refine their ability to craft coherent essays, reports, and research papers, adhering to academic conventions and standards. Emphasis is placed on clarity, coherence, and precision in writing, empowering learners to excel in various academic disciplines and prepare for success in higher education and professional endeavors.

BSL402 FinTech

(3-0-0) 3 Credits

This course offers an introductory exploration of Financial Technology (FinTech), which revolutionizes the traditional financial services industry through innovative digital solutions. Students will gain insights into the intersection of finance and technology, understanding how FinTech disrupts and transforms various sectors such as banking, payments, lending, insurance, and wealth management. Topics include blockchain technology, cryptocurrencies, peer-to-peer lending, robo-advisors, regulatory challenges, and the outlook of FinTech.

BSL403 Advanced-Data Analysis Tools

(3-0-2) 4credits

This advanced data analysis tools course delves into cutting-edge methodologies and technologies for extracting insights from complex datasets. Through hands-on projects and theoretical exploration, students will master advanced statistical techniques, machine learning algorithms, and data visualization tools. Topics include deep learning, natural language processing, ensemble methods, and big data analytics, equipping participants with the skills to tackle real-world data challenges and drive informed decision-making in various industries.

BSL405 AI In Business

(3-0-0) 3 Credits

This course explores the intersection of artificial intelligence (AI) and business, focusing on how AI technologies are revolutionizing various aspects of modern organizations. Participants will gain a comprehensive understanding of the fundamentals of AI and its applications within different business contexts. The course begins with an overview of AI concepts, including machine learning, natural language processing, computer vision, and deep learning. Through case studies and real-world examples, students will examine how AI technologies are transforming industries such as finance, healthcare, marketing, and supply chain management.

BSL502 Management of Human Resources

(3-0-0) 3 Credits

The course outlines about HRM and its place in the organization and the different verticals - from Strategic Workforce planning, Talent Acquisition, onboarding performance management, learning and Development, Talent Management, succession planning, employee relations and employee life cycle.

BSL504 Financial Management

(3-0-0) 3 Credits

This course covers basic concepts of Finance that students need as foundation for subsequent programmes in Finance. It demonstrates the relationship of Finance to Economics & Accounting. The course demonstrates the linkages between commercial enterprises & the Indian & Global Financial Systems. It explains all concepts in the area of Finance which are also important for students interested in non-Finance functions. The course explains all areas which are relevant for students interested in pursuing a career or planning to start their own business. It discusses the theories, analytical methods and practical applications that are helpful in addressing issues in financial management. Designed to be immensely practical & relevant, the course will help students in making sense of the business world in general & financial world.

BSL505 Marketing Management

(3-0-0) 3 Credits

Defining Marketing for the 21st Century: Marketing Concept and Process; The changing marketing Landscape and Developing Marketing Strategies and Plans: Role of marketing in company's strategic planning; Customer drives marketing strategy and

integrated marketing mix; managing the marketing effort. Scanning the Marketing Environment, Forecasting Demand, and Conducting Marketing Research; Creating Customer Value and Customer Relationships; Analysing Consumer Markets and Analysing Business Markets. Identifying Market Segments and Targets; Competitive Dynamics; Crafting the Brand Positioning; and Creating Brand Equity. Designing Value: Setting Product Strategy; Designing and Managing Services and Developing Pricing Strategies and Programmes. Delivering Value: Designing and Managing Integrated Marketing Channels and Managing Retailing, Wholesaling, and Logistics. Communicating Value: Designing and Managing Integrated Marketing Communications; Managing Mass Communications; Managing Personal Communications. Creating competitive advantages; marketing in the global environment; managing the holistic marketing effort; introducing new marketing offerings; social responsibility of marketing.

BSL508 Consumer Behaviour

(3-0-0) 3 credits

Introduction to Consumer Behaviour - Importance of Consumer Behaviour; Evolution of Consumer Behaviour; Methods of Studying Consumer Behavior ; Customer Centric Organizations; Market Analysis; Market Segmentation, Marketing Mix Strategies; Value of brands in Marketing Strategy; Customer Loyalty and Retention Strategy; Global Marketing Strategy; Global Advertising Effectiveness Consumer Decision Making - Consumer Decision Process Model; Variables affecting the Decision Process; Types of Decision Process; Factors Influencing the Extent of Problem Solving; Need Recognition; Internal and External Search; Pre-Purchase Evaluation; Retailing and the Purchase Process; Determinants of Retail Success or Failure; Point of Purchase Materials; Consumer Logistics; Location Based Retailing; Direct Marketing; Consumption Experiences; Importance of Customer Satisfaction; Factors affecting Satisfaction Level. Individual Determinants of Consumer Behaviour - Demographics and Consumer Behaviour; Economic Resources and Consumer Behaviour ; Personality and Consumer Behaviour; Personal Values; Lifestyle; Motivational Conflict and Need Priorities; Motivational Intensity; Motivating Consumer; Importance of Consumer Knowledge; Types of Consumer Knowledge; Sources of Consumer Knowledge; Benefits of Understanding Consumer Knowledge; Consumer Beliefs; Consumer Feelings; Consumer Attitudes; Consumer Intentions. Environmental Determinants of Consumer Behaviour. Influencing Consumer Behaviour - Shaping Consumer's Opinion; Opinions Change; Product's and Advertising's Role in Shaping Consumer Opinion; Cognitive Learning; Retrieval of Information; Company's Role in Helping Consumers to Remember

BSL509 Managerial Economics

(3-0-0) 3 Credits

Basics of Managerial Economics+ Introduction to Managerial Economics: Definition, Nature & Scope, Relationship with other subjects, Objectives of Business Firms, Economic v/s Accounting Profit. Decision Making in the Household Consumer Choice; Theory of Demand and Elasticity of Demand: Meaning, Determination, Types, Estimation and Forecasting. Decision Making in the Firm - Theory of Production and Cost; Product Price Determination in Perfect Competition, Monopoly, Monopoly Completion, and Oligopoly Markets. Macroeconomics Concepts National Income Determination using Keynes and IS-LM Models, Inflation, Fiscal and Monetary Policy, Game Theory.

BSL511 Business Statistics

(3-0-0) 3 Credits

Measures of Central tendency, Dispersion (variation) and kurtosis their measures, their characteristics (merits and demerits) and application. Proof- Sum of the Deviations taken from AM is zero. Combined Mean and problems on missing figures application- Individual, Discrete and continuous series. Correlation and linear Regression Analysis scatter Diagram, Karl Person's & Rank Correlation Method, Standard Error and Probable Error of Correlation and Significance of Correlation Regression- Difference between Correlation & Regression, why Coefficient of Correlation lies between -1 and +1 why there are two regression lines & their properties and the properties of Regression Coefficients, Explained & Unexplained Variation. Solution of the regression lines and standard error of the estimates of regression. Probability, Random variable, Expectations and probability Distributions, Binomial, Poisson's & Normal Distributions fitting of Distribution and their properties and solution of problems. Central limit theorem. Sampling Fundamentals and Sampling Distributions, sampling error and standard error of the estimated parameter & estimator, Estimation & Hypothesis Testing, Parametric, Algebra of Expectations and decision making.

BSL513 Operations Management

(3-0-0) 3 Credits

Introduction: The field of operations management, production systems, O.M. in the organizational chart, historical development of O.M, role of services in the post-industrial society, service operations management, current issues in O.M. Product Design: Designing for the Customer - Quality Function Deployment, Value Analysis, Value Engineering, Designing Products for Manufacturing and Assembly, Measuring Product

Development Performance. Manufacturing Process Selection and Design: Process Selection - Types Of Processes, Process Flow Structure, Product Process Matrix. Service Process Selection and Design: The Nature of Services, An Operational Classification of Service, Designing Service Organizations, Structuring The Service Encounter, Service System Design Matrix, Service Blueprinting and Fail Sating. Facility Location and Layout. Waiting Line Management. Capacity Management: Capacity Management in Operations, Capacity Planning Concepts, Capacity Planning, Planning Service Capacity Aggregate Sales And Operations Planning: Overview of Sales And Operations Planning Activities, The Aggregate Operations Plan, Aggregate Planning Techniques. Inventory Control: Definition Of Inventory, Purposes of Inventory, Inventory Costs, Independent Versus Dependent Demand, Inventory Systems, Fixed Order Quantity Models, Fixed Time Period Models, Selective Control, Including ABC, VED Classifications, Optional Replenishment System, 2Bin System. Managing queues. Supply Chain Management: Supply Chain Drivers, Supply Chain Strategy, Measuring Supply Chain Performance, Push Strategy/Pull Strategy/ Push Pull Strategy, Bullwhip Effect, Outsourcing, Design For Logistics, Global Sourcing, Mass Customization, Efficiency of Service Delivery. Total Quality Management.

BSL516 Entrepreneurship and Innovation

(3-0-0) 3 credits

Innovation and Entrepreneurship course focuses on the interconnection between entrepreneurial thinking and innovation. The course will introduce students to the fundamentals of innovation and entrepreneurship, providing them with a blueprint for the ideas and strategies to build a successful venture. This course attempts to address critical areas for successful growth, including design thinking, open innovation, business models, product-market fit, and financing. This course will teach students to think like an entrepreneur and provides the models, tools and frameworks to further develop your business or idea.

BSL519 Organizational Behaviour 1

(3-0-0) 3 Credits

The course outlines the study of Organizational Behaviour focusing on areas of Individual, Group and Organizational Systems. In this course focus is on areas of diversity of organization, Attitudes and Job satisfaction, Emotions and Moods, Personality and values, Perception and Individual Decision making, Motivation concepts to applications, Communications and Foundations of Group Behavior

BSL521 Financial Reporting & Control

(3-0-0) 3 Credits

This course provides a comprehensive understanding of financial reporting principles and practices, along with analytical techniques for interpreting financial statements. Topics include financial statement preparation, analysis of income statements, balance sheets, and cash flow statements, evaluation of financial ratios, forecasting techniques, and the interpretation of financial data for decision-making purposes. Accounting as an information system, Bases of accounting, Basic concepts and conventions, Branches of Accounting, International Financial Reporting Standards (IFRS). Business Income: Measurement of business income -Net income; the accounting period, the matching concept, Revenue recognition, Salient features of Accounting Standard (AS 9) Recognition of expenses. Depreciation: Nature/Methods of depreciation, Inventories; meaning, Significance of inventory valuation. Final Accounts: Capital and revenue expenditures and receipts: general introduction only. Preparation of financial statements of corporate business entities from a trial balance. Creation of vouchers and recording transactions, preparing reports – cash book and bank book, ledger accounts, trial balance, Profit and Loss Account (Income Statement) and Balance Sheets. Introduction to Tally Software (latest version) is part of the course as well.

BSL522 Marketing Research

(3-0-0) 3 Credits

This course enriches MBA students with the theoretical and practical knowledge of research process for solving marketing problems. Students are taught as well as made to practice the systematic and objective process of conducting research (which involves problem identification, developing a theoretical approach, research design, field work and data collection, data analysis and interpretation, and report writing) in the context of marketing problems. The learning in this course will enable students to independently conduct market research in future.

BSL523 Indian Financial Systems

(3-0-0) 3 Credits

This course provides an overview of the Indian financial system, covering its structure, institutions, and regulatory framework. It explores the functioning of financial markets, including money markets, capital markets, and derivative markets. It provides awareness about the regulatory framework in which the financial service industry operates. Financial instruments at the disposal of the industry and on their specific use at the hand of financial service providers have also been

incorporated in this course. It also considers how recent developments, including technological advances and economic globalization, have instilled renewed interest in activities such as acquisitions and mergers, and contemplates the future of the industry. Topics include Non-Banking Financial Services, Insurance Services, Merchant Banking, Credit Rating Services, Factoring and Forfeiting, Venture Capital, Plastic Money (Credit cards), Lease & Hire Purchasing, Housing Finance.

BSL524 Logistics and Supply Chain Management

(3-0-0) 3 Credits

In this course, the students will be introduced with main concepts, best practices, and key strategies of logistics and supply chain management. The course shall specifically address the following issues: Managing and using information to improve supply chain efficiency, reduce uncertainty, Information distortion (the bullwhip effect) and its countering strategies, Collaborative Planning, Forecasting and Replenishment, Supply chain inventory management, utilizing postponement for efficient supply chain design, Managing short life cycle products through accurate response, Outsourcing and contract manufacturing.

BSL525 Information Systems for Business

(2-0-0) 2 Credits

This course, Information Systems for Business, shall provide a perspective on Information Technology and Systems in organizations, business value of information systems, ethical considerations and privacy issues while using Information Technology & Systems in an organization. It includes topics on building an IT infrastructure within an organization, Cloud Computing, Emerging Technologies, Enterprise Systems (ERP Systems, CRM Systems, SCM Systems etc.) E-commerce & Digital Payment Systems, Systems for decision making in organizations, building information systems in organizations and securing an organization's information systems.

BSL526 Sales and Distribution Management

(3-0-0) 3 Credits

This course is meant to make students understand fundamentals of Sales Management and Distribution Management. Since many students with marketing specialization start their career in sales or business development, it is essential for them to understand the basics of personal selling, sales process, sales force management, distribution dynamics, various channels of distribution etc. This course shall broadly cover topics such as, Sales Strategy, Sales Planning and Forecasting, Sales Force Staffing, Retailing, Wholesaling, Distribution

Channels - Physical and web channels, Channel design, Channel Economics, Channel Conflict and Channel Management.

BSL528 Organization Behavior 2

(3-0-0) 3 Credits

The course focuses on the area of understanding Work teams, Leadership traits and theories, Power and Politics, Foundation of Organization Structure, Organization Culture and Organization Change and Stress Management.

BSL603 Strategic Management

(3-0-0) 3 Credits

The course enables students to understand the concept of Strategy. It provides insights about the highly competitive markets where firms with competitive advantage only survive. It helps students analyze the business environment in which business operates not only the external environment but also the internal environment in order to understand the business environment better. The course explains how strategy is formulated, implemented and evaluated in an organization, taking them through the process and techniques used in leading organizations globally.

BSL611 Marketing Strategy

(3-0-0) 3 Credits

Marketing Strategy is a fundamental area within the field of marketing focusing on the strategic application of marketing principles to foster business growth and competitive advantage. This course provides a comprehensive exploration of marketing strategy concepts and their application in real-world business scenarios. Emphasizing strategic analysis, planning, and implementation, the course prepares students to the roles and responsibilities of senior marketing managers with an integrative perspective of marketing decisions. The course broadly includes topics such as, product and brand strategy, pricing strategy, digital marketing strategy, Green Marketing, Global marketing, crisis management in marketing etc.

BSL612 Brand Management

(3-0-0) 3 Credits

Brand management is an ever-evolving discipline- one that involves a balance between strategy and emotion. Brand is a promise made to consumer. Brands have come to acquire center stage in marketing and they are

often labeled as 'the' asset of value creation. This course is designed to provide an understanding of how brands are created and managed over time. Course will cover various concepts and practices of brand management like what is branding, different attributes of a brand, brand positioning, brand building, relation of a brand and consumer, brand equity and value and brand evaluation. This course seeks to impart understanding of the role brands play in contemporary businesses.

BSL613 New Product Development

(3-0-0) 3 Credits

This course is designed to provide students with a rigorous understanding of the processes and strategic considerations involved in bringing new products to market. It explores various issues including new product design, market entry strategies, and marketing of new products. The course aims to equip students with the skills to identify and seize market opportunities and stimulate the way students think and evaluate new product development by analyzing important steps in the product development and marketing processes. Broad contents include Product Design and Development, Technical and Economic Feasibility Analysis, Strategic Product Planning, Prototyping and Testing, Product Life Cycle Management, Market Entry Strategies, Marketing Mix for New Products, Managing Product Portfolios, Pricing and Distribution Strategies, Promotion Strategies for New Products, Launching the Product, International Product Development, Innovation and Future Trends in Product Development, Legal & Ethical Considerations etc.

BSL614 Design Thinking

(3-0-0) 3 Credits

This course is designed to introduce MBA students to the principles of Design Thinking, a problem-solving methodology used to foster innovation and strategic solutions. By integrating analytical, synthetic, divergent, and convergent thinking, students will learn to generate a diverse array of potential solutions and narrow these down to the most effective one.

Through this course, participants will gain an appreciation for various applications of the Design Thinking process and learn to incorporate different methodologies to achieve successful outcomes. This will equip participants, as future business leaders and innovators, with the skills to solve complex problems and add significant value through creative and effective solutions.

BSL615 Behavioral Economics For Managers

(3-0-0) 3 Credits

Behavioral Economics is an interdisciplinary field that blends insights from psychology, judgment, decision making, and economics to explore how individuals actually behave in economic environments, as opposed to how they should behave if they were perfectly rational. This course provides a comprehensive overview of how cognitive biases, emotions, and social influences affect economic decisions. Through a blend of theoretical concepts and real-world applications, students will learn to identify and analyze the irrational behaviors that often guide economic decisions. The course will explore key topics such as Prospect Theory, Heuristics, Biases, Nudge Theory, and the implications of behavioral economics on Public-policy, Marketing, and Finance. By applying these insights, students will develop the skills needed to create strategies that can positively influence behavior in various sectors and understand the broader implications of economic theories in everyday life.

BSL616 Business Valuation

(3-0-0) 3 Credits

The course on Business Valuations builds on the basic fundamental concepts of Finance to accurately value a company's tangible & intangible assets. It explores all aspects of valuation from estimating cash flows and discount rates to the strategy for creating value. The course focuses on the main valuation techniques & methods to determine the real value of a firm. The course imparts skills to analyze a company financially while gaining insights into its drivers of value i.e. get the numbers & the story to create a cogent picture of the enterprise. The course is taught with the twin view of valuing the company through eyes of an external portfolio manager as well as through the internal corporate strategist interested in operating that business. The pedagogy apart from fundamentals & quantitative tools will use case studies to drive home the key learnings to students.

BSL617 Corporate Finance & Treasury Management

(3-0-0) 3 Credits

This course builds on the foundation developed in Financial Management focusing on critical areas of Financial Management within Corporates. It provides tools of financial decisions related to Working Capital & Long-term Capital needs of Corporates. It deals with financial policy choices of Corporates e.g. Capital Budgeting & structure, Dividend policy. The course will help students evaluate complex investments, set and execute financial policies and methods to integrate

financial decisions faced by corporates. It will equip the students to manage the treasury operations of corporate and dovetail them to the organizational strategy.

BSL618 Introduction to FinTech

(3-0-0) 3 Credits

This course offers an introductory exploration of Financial Technology (FinTech), which continues to revolutionize the traditional financial services industry through innovative digital solutions. Students will gain insights into the intersection of finance and technology, understanding how FinTech disrupts and transforms various sectors such as banking, payments, lending, insurance, and wealth management. Topics include blockchain technology, cryptocurrencies, peer-to-peer lending, robo-advisors, regulatory challenges, and the outlook of FinTech.

BSL619 International Trade and Finance

(3-0-0) 3 Credits

This course is designed for MBA students with an aim to equip them with the knowledge and skills necessary for success in the global marketplace. It offers a comprehensive exploration of international trade and finance, covering essential concepts and practical applications. Topics include trade theories, global trade finance, international debt and equity finance, global exchanges, currency dynamics, interest rate mechanisms, arbitrage strategies, trade operations and documentation, and risks in international trade and finance. Through theory and case studies, students gain the expertise needed to navigate the complexities of international trade and finance effectively.

BSL621 Managing Business Risks

(3-0-0) 3 Credits

This course on Managing Business Risks introduces the participants to the classical theory of risk along with its application to various kind of risks, and their interplay within and outside an Enterprise. The course will teach students to land at various risk contributions, starting from a given vantage point, and cover the following risks affecting the organisation - Financial Risk, People Risk, Market risk, Operational risk, Third Party Risk, Technology Risk, ESG Risk, and Systemic Risks (like pandemic, terrorism, sabotage etc.) The course will help the students to begin /end with either kind of risk, and understand its impact on the enterprise as a whole - pressing detailed risk metrics for each risk type.

BSL622 Applied Machine Learning

(2-0-2) 3 Credits

Applied Machine Learning course shall cover the complete cycle of predictive model building starting from data exploration, to data preparation, data preprocessing to model building to model evaluation. It shall cover Linear Regression model building both from a statistical standpoint and in the ML way. Artificial Neural Networks and the perceptron learning model shall be covered. It shall also cover supervised learning techniques like Decision Trees, Logistic Regression, K-Nearest Neighbour, Support Vector Machine etc and unsupervised learning techniques such as principal component analysis, clustering etc. All ML model building shall be done in Python using relevant Python libraries.

BSL623 Generative AI

(2-0-2) 3 Credits

This course shall first provide foundational AI concepts and then take the participants through practical applications of AI in enhancing day-to-day business operations and decision-making processes. The latter half of the course shall delve deeper into Generative AI, focusing on advanced applications and technical aspects such as Language Models, Code Generations, GANs, VAEs, LangChain, and RAG. Designed for MBA students, this course blends theoretical knowledge with practical, hands-on projects to build a robust understanding of AI's capabilities and challenges.

BSL624 Deep Learning

(2-0-2) 3 Credits

Deep Learning course shall cover Artificial Neural Networks, Deep Neural Networks, Convolutional Neural Networks, Capsule Networks, Generative Adversarial Networks etc. It shall use libraries like TensorFlow and Keras and help students build deep neural network models, and also evaluate them. Concepts like overfitting and regularization shall be dealt with in detail to help students understand the downsides of building deep neural networks with multiple layers and multiple nodes and understand how to optimize the models to get reliable results.

BSL625 Block Chain and Applications

(2-0-2) 3 Credits

The primary purpose of this course is to provide knowledge and hands-on experience about various concepts, techniques, and methods that serve as a foundation for Blockchain and DLT technologies.

Furthermore, this course will also present the internal workings and applications of this potentially disruptive technology by taking Bitcoin as one example of cryptocurrency. Similarly, using the Ethereum platform outside of cryptocurrencies, this course also presents smart contracts as self-executing scripts over Blockchain for deploying business logic in an automated way in decentralized applications. Finally, this course will also discuss several use cases and applications regarding the potential impact of blockchain technology on the banking and financial industry, governments, contracting, and identity management.

BSL626 Natural Language Processing

(2-0-2) 3 Credits

The course provides an in-depth exploration of Natural Language Processing (NLP) and offers comprehensive training in leveraging Python programming to extract meaning from text data. The course will start with the foundational concepts of NLP, including intricate techniques such as text pre-processing, tokenization, stemming / lemmatization etc and then provide extensive hands-on experience with powerful Python libraries like NLTK, spaCy, Gensim etc. enabling the participants to master essential tasks such as parts-of-speech tagging and named entity recognition. The course shall broadly cover, text classification, text summarization, sentiment analysis, opinion mining, topic modeling etc.

BSL627 Compensation and Benefits

(3-0-0) 3 Credits

The course focuses on the area of understanding about Conceptual framework of Compensation Management, Contingent Pay - Pay for Performance, competence, skills, Administrating and controlling salary costs and reviews. Statutory requirements, Designing Benefits. Compensation and Reward Policy, processes, procedures.

BSL628 Employee Relations

(3-0-0) 3 Credits

Employee Relations course shall provide a historical overview of the area of Industrial Relations and expand the scope to employee relations in an organization beyond the factory or shop floor. Topics covered shall broadly include industrial disputes, collective bargaining, trade unions, workers participations in management, discipline and disciplinary action, grievance handling procedure, employee compensation - Wages, Incentives etc. in compliance with the regulations of both Indian and International Labour Organizations.

BSL632 Services Marketing

(3-0-3) 3 Credits

This course shall introduce the concept of services marketing by first differentiating between goods and services from a marketing perspective and then extend towards insights into consumer behaviour in services. The course shall broadly cover marketing mix in services marketing, Service quality gaps, consumer expectation and perception of services, customer satisfaction measurement tools and techniques, customer defined service standards, service designing, service delivery, service marketing strategy, service recovery, service pricing etc.

BSL636 Integrated Marketing Communication

(3-0-0) 3 Credits

The objective of the course is to help students understand the principles and practices of marketing communications and its concepts, strategies, methods and tools with a view to enable students to provide a managerial framework (plan, create, implement good marketing communications) as well as to be familiar with all types of marketing communications in their role as advertisers and users. The course shall also give the participants a perspective of media and its strategic use in designing good IMC campaigns for any company. The course shall broadly cover Advertising - Strategy and Implementation, Budgeting, Segmenting, Targeting and Positioning, IMC Creative Concept and Messages, Message Execution, IMC Print, Broadcast, and Out-of-Home Media, basics of media planning, media selection, media strategy and tactics, current trends in the indian media industry, Social, Legal, and Ethical Issues in IMC etc.

BSL638 Digital Marketing and Social Media

(3-0-0) 3 credits

The course will provide students an overview of the fundamental elements, principles, tools and techniques of digital marketing and communication. They will be able to understand and apply the core principles, concepts and nuances of digital marketing and communications in the context of the overall product/service/brand marketing. The students will also get an orientation in using some of the popular digital marketing techniques like Search Engine Optimization, Search Engine Marketing, Social Media Marketing, Behavioural Targeting, Retargeting, e-CRM and some digital marketing planning and analytics tools like Google AdWords, Google Keyword Tool, Google Webmaster, Google Analytics, etc. Building blocks of this course require having a sound understanding of marketing planning and management process. On completion of the course, the students

should have a developed and practical understanding of how to create a digital marketing plan and how to approach and leverage various available digital marketing channels in an integrated manner to market products and services – be it to create awareness, acquire new customers or retain existing customers. The course will help the students in making a good career in the field of digital marketing by having sound understanding of the concepts along with practical orientations.

BSL643 Financial Derivatives

(3-0-0) 3 Credits

This course delves into the fundamentals of investment strategies and derivatives instruments, offering a comprehensive understanding of financial markets and their associated risks. The course aims to enable a better understanding of various derivatives products available in equity derivatives markets, regulations and risks associated with the products and the exchange mechanisms of clearing and settlement. Managing financial risk is a critical objective of firms. Accordingly, this course covers the aspect of reducing risk coming from interest rates, exchange rates and equity market risk using derivative products like futures, options and swaps. Additionally, the course covers the issues of pricing, hedging and trading derivatives especially from a corporate treasury manager's perspective.

BSL648 Mergers & Acquisitions

(3-0-0) 3 Credits

Mergers & Acquisitions (M&A) are part of Strategic financial management & corporate growth strategy. Whether driven by the current owners of enterprise or common owners of diverse entities, M&A has come to be part of modern corporate lexicon. This course will help students appreciate the role & importance of M&A in the present corporate world. The student will gain insights into the process and be able to form an opinion if an M&A transaction makes sense for the firm. The students of Finance will be exposed to the fundamentals, valuation methods, tools & process of M&A. The course will apply basic finance principles & analytical techniques to actual problems encountered by senior management or advisors to them. The course apart from teaching M&A will cover different takeover tactics & defenses. The course will be designed as an applications-oriented course and will draw heavily on real world cases.

BSL655-Leadership: Past, Present & Future

(3-1-0) 4 credits

Leadership Fundamentals; Evolution of the Leadership Concept; Traits Approach to Leadership; Skills Approach to Leadership; Behavioural Approach to Leadership and Situational/Contingency Approach to Leadership. Authentic Leadership; Spiritual Leadership; Servant Leadership and Adaptive Leadership. Psychodynamic Approach; Leadership Ethics; Team Leadership; Gender and Leadership and Culture and Leadership. VUCA Suited Leadership Traits, Attributes and/or competencies.

BSL656 Industrial Relations & Labour Laws

(3-0-0) 3 Credits

This course focuses on understanding the Labour laws applicable to organizations and employees such as Labour Legislation, Labour reforms, Labour Code, and Employment Legislation. The Industrial Relations aspect shall cover, the Payment of Wages Act, the Minimum Wages Act, the Factories Act, the Employment Exchange Act, the Apprentice Act, the Payment of Bonus Act, the Contract Labour (Regulation and Abolition) Act, the Trade Union Act, the Industrial Employment (Standing Orders) Act, the Industrial Disputes Act, the Employee Compensation Act, the ESI Act, the PF Act, the Maternity Act, the Payment of Gratuity Act etc.

BSL657 Workforce Planning, Recruitment and Selection

(3-0-0) 3 Credits

In 21st century HR is influenced by various factors like size of the workforce, rising employee expectations, composition of workforce, new skills and competencies required. The Course will provide the tools needed to analyze the workforce, develop a strategy to match demand for staff with the right people at the right time, and create a plan for talent management and retention. The course will help in analyzing the role of recruitment and selection in relation to the organization's business and HRM objectives in Indian context. This includes demonstrating the appropriate use of job descriptions, application forms and related staffing tools such as internet recruiting. The course contents broadly are Manpower Planning, Recruitment Challenges, Interviewing, Selection, and Orientation & Onboarding. At the end of the course the student will be able to use manpower planning techniques; identify, define, assess and optimally apply appropriate sources of recruitment; define and utilize various selection tools, techniques and tests; plan appropriate selection strategies and formulate selection procedures across a variety of verticals and business situations; plan and devise orientation and onboarding programmes.

BSL661 Training and Development**(3-0-0) 3 Credits**

This course, Training and Development shall focus on the theories and tools of learning and development. Topics covered shall include, Identification of skills gaps, capability building within the organization, developing training programmes, soliciting and recording training feedback, working with stakeholders and functional leaders in identifying organizational needs etc.

BSL662 Organizational Development**(3-0-0) 3 Credits**

Organizational Development (OD) is a field of research, theory, and practice dedicated to expanding the knowledge and effectiveness of people to accomplish more successful organizational change and performance. The course shall enable the students to understand the philosophical, historical, theoretical, political and practical underpinnings of OD as a core area of practice within HRD; increase awareness of different tools that are used to diagnose organizations as well as interventions used through hands-on experience and; enhance skills in facilitation, OD skills, group process, communication, and collaboration. Main topics shall include: introduction to organization development; the nature of planned change; the OD practitioner; entering and contracting; diagnosing organizations, groups and jobs - collecting and feeding information; designing individual, group and organizational level interventions; strategic change interventions; action research; etc. At the end of the course, the students shall have basic theoretical and competency base in OD that they will need to be able to assist with and facilitate positive, planned change efforts within the organizations in which they work.

BSL665-Cross Cultural HRM & Inclusive workplace management**(3-1-0) 4 credits**

Recent definitions concern IHRM with activities of how MNCs manage their geographically decentralized employees in order to develop their HR resources for competitive advantage, both locally and globally. The role and functions of IHRM, the relationship between subsidiaries and headquarters, and the policies and practices are considered in this more strategic approach. IHRM is also defined as a collection of policies and practices that a multinational enterprise uses to manage local and non-local employees it has in countries other than their home countries.

BSL666 Talent Management**(3-0-0) 3 Credits**

The course intends to make students aware of the concept of talent management and its importance in 21st century. Students will learn the role of environment and various innovative practices that businesses go for to manage their talent. The role of IT in effective talent management is also highlighted.

BSL676 Big Data Analytics**(2-0-2) 3 Credits**

The explosion of social media and the digitization of every form of business and economic activity has resulted in the creation of large volumes of data, mostly unstructured data such as web logs, videos, audio recordings, photographs, e-mails, tweets etc. and streaming data such as data from sensors and IoT devices. Collectively, data characterized by large volume, variety and velocity has been dubbed as "Big Data". Hadoop and Spark have emerged as general-purpose cluster-computing frameworks to reliably and cheaply store big data, and efficiently process them for business and social benefit. Additionally a whole range of big data ecosystem components keep evolving every day. Comprehending this big data space has become imperative for every aspiring data scientist. Accordingly, this course "Big Data Analytics" has been designed to help 'Data Science' participants get a grasp of the distributed storage and processing frameworks and other important ecosystem components that go along, to handle specific data processing needs.

BSL 680 Data Visualization and Expression**(2-0-2) 3 Credits**

Students will use Tableau as their main tool to visualize data and develop dashboards but will develop transferrable skills which can apply to many of the most popular software packages in the current marketplace. The students will be able to employ best practices in data visualization to develop charts, maps, tables, and other visual representations of data. Use Tableau's visualization tools to conduct data analysis, especially exploration of an unfamiliar dataset. Create compelling, interactive dashboards to combine several visualizations into a cohesive and functional whole. Utilize advanced Tableau features including parameters, data blending, custom SQL, very large datasets, custom date hierarchies, and others. Use data visualizations, dashboards, and Tableau Stories to support relevant communication for diverse audiences.

BSL683 Marketing Analytics**(3-0-0) 3 Credits**

Marketing Analytics course aims to bring out the importance and significance of data-driven decision making in the field of marketing. It helps participants apply descriptive, predictive and prescriptive models to solve marketing problems. The course shall broadly cover topics such as customer analytics for market segmentation, perceptual mapping for product positioning, application of choice models, conjoint analysis etc. for product analytics, Pricing, Web analytics, Customer Life time value, Churn analytics etc.

BSL689 SQL for Data Analysis and Business Intelligence**(2-0-2) 3 Credits**

This course is designed to give a primer in the fundamentals of SQL and working with data so that the students can begin analyzing it for data science purposes. At the end of this course, students will be able to identify a subset of data needed from a column or set of columns and write a SQL query to limit to those results; use SQL commands to filter, sort, and summarize data; create an analysis table from multiple queries using the UNION operator; and manipulate strings, dates, & numeric data using functions to integrate data from different sources into fields with the correct format for analysis.

BSL695 Security Analysis & Portfolio Management**(3-0-0) 3 Credits**

This course is intended to provide a general overview of capital markets, financial instruments, and investment process. The course would emphasize the role of modern financial theory in portfolio management. The broad topics includes Investment process, Intermediaries in financial market, Sources of financial information, Different investment alternatives, Approaches of bond valuation, Introduction to fundamental analysis. Technical analysis and efficient market hypothesis. Introduction to mutual funds and their risk evaluation and Role of SEBI are part of the course. Portfolio management is taught with a view to devise the best investment plan for individuals as per their income, budget, age, and ability to undertake risks. Portfolio management is taught as a discipline that minimizes the risks involved in investing and increases the chance of making profits. The main topics such as portfolio construction, Markowitz model, the Sharpe Index model, capital asset pricing theory, arbitrage pricing theory, portfolio evaluation, and revision are covered.

BSL697 Management of Retail Financial Institutions**(3-0-0) 3 Credits**

This course covers in details, workings of Retail Financial Institutions e.g., Retail Banks, Non -Banking Finance Companies, NBFC-Micro Finance Institutions, Life Insurance, General Insurance & Health Insurance. It provides an overview of the industry, products, business strategy, regulatory framework and management of the institutions. It helps the students understand the key issues relevant to the industry and managing the corporates in the industry. The course integrates the theoretical concepts with practical considerations and real-life cases. The course involves interaction with Industry professionals and/or field trips as part of pedagogy.

BSL698 Strategic Financial Management**(3-0-0) 3 Credits**

This is an advanced course on corporate finance or financial management. Achieving competitive advantage through strategic financial management is inevitable in 21st century business world. The scope of strategic financial management deals with tasks such as ensuring the availability of funds, allocating them for different uses, managing them, forecasting financial requirements, investing funds, performing profit planning, controlling costs, and estimating the rate of return on investment. Apart from these, the course explores the contemporary concepts and trends in strategic financial management (SFM), particularly focusing on cutting-edge areas like corporate valuation methods, value-based management, need, causes and impact of Buy-back Shares, Takeover Tactics, Organizational Architecture, and other related areas of strategic financial decision making in the present corporate world.

BSL699 HR Analytics**(3-0-0) 3 Credits**

HR Analytics, which is also referred to as People Analytics or Workforce Analytics, deals with the collection, modelling and analysis of human resources data to help HR professionals and their organizations make data driven decisions. Towards that end, this course focuses on the area of understanding HR metrics across different verticals in HR and its implications, understanding the business needs and key areas from HR to integrate, identify trends and patterns in data and focus on building skills of the HR team while having interaction with the stakeholders.

BSP504 Advanced Excel Lab**(0-0-4) 2 Credits**

In this Microsoft Excel course, students will learn to easily build dynamic tools & Excel dashboards to filter, display and analyze your data. You could create your own formula-based Excel formatting rules, join datasets from multiple sources with XLOOKUP, INDEX & MATCH functions, Manipulate dates, times, text, and arrays. You will be able to efficiently navigate and manipulate worksheets and workbooks. Implement formulas, functions, and names, design a reusable data entry template that protects formulas, implement conditional formatting, Connect, prepare, and validate data employing editing tools, formulas, and Flash Fill. Identify, sort, and select detailed data with tables and slicers. Present and analyze data with conditional formatting, charting, sparklines, and printing parameters. Construct IF functions that make decisions - present results visually. Analyze summary data with PivotTables and implement a quick dashboard.

BSP508 Python for Data Analysis**(2-0-2) 3 Credits**

The Python for Data Analytics course provides students with wide general overview of Python - a general-purpose programming language that is becoming ever more popular for data science. The focus is on the application of Python specifically for data science. With this Programming Foundation and Data Analytics course, you will learn programming fundamentals, how to analyze data in Python, perform simple statistical analyses and create meaningful data visualizations, about ways to import, store and manipulate data, and helpful data science tools to conducting data analysis. The course is about ways to import, store and manipulate data, and helpful data science tools to conducting data analysis.

BSR101 GP-I**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR102 GP-II**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade

their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR201 GP-III**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR202 GP-IV**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR301 GP-V**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR302 GP-V**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

BSR501 General Proficiency I**1 Credit**

Under General Proficiency, students are expected to independently work on their ability to face aptitude tests which will then get tested through an online aptitude test conducted towards the end of the semester. Students are also encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time and submit such certificates towards the end of the semester. They are also encouraged to take part in various activities conducted by the professional

societies and clubs of the University. They are expected to actively participate in the industry speaker sessions organized by the school from time to time and gather practical insights emerging from the real-life experiences of the speakers.

BSR502 General Proficiency II

1 Credit

Under General Proficiency, students are expected to independently work on their ability to face aptitude tests which will then get tested through an online aptitude test conducted towards the end of the semester. Students are also encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time and submit such certificates towards the end of the semester. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University. They are expected to actively participate in the industry speaker sessions organized by the school from time to time and gather practical insights emerging from the real-life experiences of the speakers.

BSR503 General Proficiency III

1 Credit

Under General Proficiency, students are expected to independently work on their ability to face aptitude tests which will then get tested through an online aptitude test conducted towards the end of the semester. Students are also encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time and submit such certificates towards the end of the semester. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University. They are expected to actively participate in the industry speaker sessions organized by the school from time to time and gather practical insights emerging from the real-life experiences of the speakers.

BSR504 General Proficiency IV

1 Credit

Under General Proficiency, students are expected to independently work on their ability to face aptitude tests which will then get tested through an online aptitude test conducted towards the end of the semester. Students are also encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time and submit such certificates towards the end of the semester. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University. They are expected

to actively participate in the industry speaker sessions organized by the school from time to time and gather practical insights emerging from the real-life experiences of the speakers.

BSS101 Community Service (CS-I)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BSS102 Community Service (CS-II)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BSS201 Community Service (CS-III)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours

by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BSS202 Community Service (CS-IV)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BSS301 Community Service (CS-V)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BSS302 Community Service (CS-VI)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community

Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

BST201 Internship I/ Vocational Course

4 Credits (0-0-8)

Summer Internship is to be performed in the summer break (May-July) by the students to keep them engaged as well as to learn the practical usage of what they have learned. Each student must do an internship in a registered company, the duration of the internship is min 4-6 weeks for UG students and Min 6-8 weeks for PG students.

BST301 Summer Internship

4 Credits (0-0-8)

Summer Internship is to be performed in the summer break (May-July) by the students to keep them engaged as well as to learn the practical usage of what they have learned. Each student must do an internship in a registered company, the duration of the internship is min 4-6 weeks for UG students and Min 6-8 weeks for PG students.

BST601 Summer Internship

6 Credits

At the completion of the second semester, each student would be expected to undergo an internship in a business organization for about 8 weeks. The student would be expected to identify a particular business issue, do extensive research on the topic and provide recommendations to solve the issue for the business. They need to submit a project report and certificates of project completion from the organization, and appear before a panel of faculty members for a presentation and viva at the end of the project.

CEC501 Seminar

(0-0-4) 2 Credits

Independent study on any recent research area in the domain of Civil Engineering as per the specialization chosen by the student. Research papers on specialized topics will be collected from journals and presented. A report shall be submitted showing the literature reviewed by the student.

CED502 Minor project**(0-0-10) 5 Credits**

The minor project will be a design project (hardware/software) on a topic suggested by the course coordinator to be completed during the designated duration. It may be of practical and theoretical interest. It must be done under the guidance of a faculty and students are expected to complete literature survey, feasibility testing, develop or implement the research work.

CED601 Dissertation Phase – I**(0-0-12) 6 Credits**

Part-I of the dissertation will cover the problem identification followed by literature review, data collections and data generations and identification of the tool of analysis, simulation and modelling and hypothesis for the problem solving, some basic trail studies.

CED602 Dissertation Phase – II**(0-0-24) 12 Credits**

Part-II of the dissertation will cover the actual detailed experimentation, simulation, modelling, result generation and reaching to the desired goal set in Part-I. Report writing and publication.

CEL402 Disaster Management**(2-1-0) 3 credits**

Seismic Micro-zonation, Natural and Manmade disasters, Prevention & Mitigation Techniques. Role of Remote Sensing and GIS in Disaster Management. Seismic Design Concepts

CEL403 - Introduction to sustainability**(3-1-0) 4 credits**

This course introduces the academic approach of Sustainability and explores how today's human societies can endure in the face of global change, ecosystem degradation and resource limitations. The course focuses on key knowledge areas of sustainability theory and practice, including population, ecosystems, global change, energy, environmental economics and policy.

CEL404 - Professional skills in sustainability practice**(3-1-0) 4 credits**

Effective and compassionate communication for students, Complex problem solving, critical thinking and creativity-based teamwork. Project management tools to achieve quality product, innovation for improvisation using self-directed approach of students. Practicing professional skills in sustainability-based projects.

CEL405 – Society and Sustainability**(3-1-0) 4 credits**

This course discusses about need of sustainability for society, concept of sustainable cities through case studies, challenges in achieving sustainability using case studies, social dimensions involved in sustainability challenges, study of response of society towards sustainable development, concept of low carbon economy. Concepts of ESG and circular economy, CSR.

CEL501 Safety and Reliability Analysis**(3-0-0) 3 Credits**

Fundamentals of set theory and probability, probability distribution, regression analysis, hypothesis testing. Stochastic process and its moments and distributions, Concepts of safety factors, Safety, reliability and risk analysis, first order and second order reliability methods, simulation-based methods, confidence limits and Baysean revision of reliability, reliability-based design, examples of reliability analysis of structures.

CEL502 Optimization Techniques in Civil Engineering**(3-0-2) 4 Credits**

Optimization Introduction – Formulation of LPP – Geometry of LPP and Graphical Solution of LPP – Solution of LPP: Simplex Method – Big M Method – Two Phase Method – Special cases in simple applications – Introduction to Duality Theory – Dual Simplex Method – Optimization of Transportation Problems – Project Management – Path Analysis

CEL504 Shoring, Scaffolding and Formwork**(3-0-2) 4 Credits**

Planning of construction work, site equipment required, Calculation of labour constants – Formwork hours – Labour Requirement – Overall programme – Detailed programme – Costing. Materials accessories proprietary products – finish materials, scaffolding material, design

of forms – analysis of forces, building and erection of formwork, formwork for domes, tunnels etc.

CEL505 Advanced Concrete Technology

(3-0-2) 4 Credits

Concrete Making Materials Aggregates – Classification, IS specifications, Properties, Grading, Methods of combining aggregates, specified grading, Testing of aggregates. Cement Chemical composition, Hydration of cement, structure of hydrated cement, special cements, and water chemical admixtures. Concrete Properties of fresh concrete, Hardened concrete, Strength, Elastic properties, Creep and Shrinkage, Variability of concrete strength. Mix Design Principles of concrete mix design, Methods of concrete mix design, testing of concrete. Special Concretes Light weight concrete, Fiber reinforced concrete, Polymer concrete, Super plasticized concrete, Properties and applications. Concreting Methods Process of manufacturing of concrete. Methods of Transportation, placing and curing. Extreme weather concreting, special concreting methods.

CEL506 Sustainable Built Environment

(3-0-2) 4 Credits

Background terms: Smart Growth, smart city and New Urbanism and the Resistance to Change; Green Building Assessment; Green Building Index; Life Cycle Costing; The Setting/Green Roofs, Case Study; Energy and Buildings; Energy and Hydrologic Systems; Materials/ Specifications; Interior Environments (lighting, air), GRIHA, LEEDs rating system, BEE Standards and guidelines.

CEL507 Design of Industrial structures

(3-0-2) 4 Credits

Elementary Plastic Analysis and Design: Introduction, Scope of plastic analysis, ultimate load carrying capacity of tension members and compression members, flexural members, and simple portal frames and design Industrial Buildings- Loads, general arrangement and stability, design considerations, design of roof trusses, industrial building frames, Design of Water Tanks Stacks and Towers.

CEL 508 Prestressed Concrete Structures

(3-0-2) 4 Credits

Theory and behavior – basic concept, methods of prestressing, loss of pre stress, Analysis of prestress, calculations of deflections, crack width; design concepts – procedures as per codes, stress distributions, limit state

design criteria; design of pre stressed concrete, Analysis and design of indeterminate prestress members, tanks, pipes and composites construction and elementary idea of pre stressed concrete bridge.

CEL509 Finite Element Analysis

(3-0-2) 4 Credits

Introduction to Finite Element Method. Brief History of the Development. Advantages & Disadvantages of Finite Element Method. Finite Element Method- The Displacement Approach. Foundations of the FEM Energy Principles. One Dimensional Finite Element. Stiffness Matrix for the basic Bar & Beam Element. Element Stresses. Shape Functions & Interpolation Polynomials. Finite Elements for Two Dimensional Planar Bodies. Triangular Elements for Plane Stress or Strain Conditions. Rectangular Elements for Plane Stress or Strain Conditions. Finite Elements for Three-Dimensional Analysis. Tetrahedral Elements. The Iso-parametric Concept. Properties of Iso-parametric Elements. Numerical Integration. Finite Elements for Plate Bending Analysis. Applications of FEA to field problems.

CEL510 Structural Dynamics

(3-0-2) 4 Credits

Free and forced vibration of single degree of freedom (SDOF) system, response to harmonic, periodic, impulsive and general dynamic loading, response of SDOF to earthquake, Free vibration of lumped multi-degree of freedom system, Approximate methods for obtaining natural frequencies and mode shapes, Frequency domain analysis of lumped multi-degree of freedom system using normal mode theory, Time domain analysis using numerical integration scheme, Free and forced vibration of continuous systems, Introduction to the dynamics of soil structure interaction problems.

CEL511 Advanced Design of Foundations

(3-0-2) 4 Credits

Introduction to Foundation Engineering, Soil Exploration, Classification of foundations, Bearing Capacity Theories, Scale Effect, Eccentrically loaded footing, Bearing capacity of- Interfering footings, Anisotropic foundations, Centric inclined load, Oblique loading, Design of Shallow Rigid Foundations, Flexible Design of Foundations: Beams on Elastic Foundation, Finite Difference Schemes and Expressions for various applied loadings and moments, Settlement and Contact pressures, Pile Foundations

CEL512 Principles of Bridge Engineering**(3-0-2) 4 Credits**

Introduction- Definition, components of bridge, classification of bridges, selection of site, economical span, aesthetics consideration, necessary investigations and essential design data; Standard specifications for roads and railways bridges: Indian Road Congress Bridge Code for specifications and loads; Various types of R.C.C. bridges (brief description of each type), Design Consideration for R.C.C. Bridges and culverts.: Design of Tee beam bridge, Various types of steel bridges (brief description of each), Design Consideration for Steel Bridges design of plate girder bridges. Hydraulic & Structural Design of piers, abutments, wing wall and approaches: Brief descriptions of bearings, joints, articulation and other details. Bridge foundation-Variety types, necessary investigations and design criteria of well foundation.

CEL513 Construction and Contract Management**(3-0-2) 4 Credits**

Project cost estimation, rate analysis, overhead charges, bidding models and bidding strategies. Qualification of bidders, Owner's and contractor's estimate. Tendering and contractual procedures, Indian Contract Act 1872, Definition of Contract and its applicability, Types of contracts, international contracts, FIDIC, Conditions and specifications of contract. Contract administration, Claims, compensation and disputes, Dispute resolution techniques, Arbitration and Conciliation Act 1996, Arbitration case studies, Professional ethics, Duties and responsibilities of parties. Management Information systems

CEL514 Infrastructure Development and Management**(3-0-2) 4 Credits**

Infrastructure overview. Private involvement in infrastructure - The Benefits and problems of Infrastructure Privatization. Challenges in Privatization - case study. Challenges to Successful Infrastructure Planning and Implementation- Mapping and Facing the Landscape of Risks in Infrastructure Projects. Strategies for Successful Infrastructure Project Implementation - Risk Management Framework for Infrastructure Projects, Shaping the Planning Phase of Infrastructure Projects to mitigate risks, Designing Sustainable Contracts, Innovative Design and Maintenance of Infrastructure Facilities, Infrastructure Modelling and Life Cycle Analysis Techniques.

CEL515 Resource Management and Control in Construction**(3-0-2) 4 Credits**

Resource Planning, Procurement, Identification, Personnel, Planning for material, Labour, time schedule and cost control. Labour management-Systems approach, Characteristics of resources, Utilization, measurement of actual resources required, Tools for measurement of resources, Labour, Classes of Labour, Cost of Labour, Labour schedule, optimum use. Material and equipment-Time of purchase, quantity of material, sources, Transportation, Time Management-Personnel time, Management and planning, managing time on the project, forecasting the future, Critical path measuring the changes and their effects - Cash flow and cost control. Resource allocation and levelling Cumulative cost - Value Management.

CEL516 Construction Economics and Finance**(3-0-2) 4 Credits**

Benefit-cost analysis, Replacement analysis, Break even analysis. Risks and uncertainties and management decision in capital budgeting. Taxation and inflation. Work pricing. Working capital management, financial plan and multiple sources of finance. International finance, Budgeting and budgetary control, Practical problems and case studies, Project cash flow, Methods, Practice, Role of Lender's Engineer. Financial Planning, Budget - Budgetary control system.

CEL517 Strategic Technology Management**(3-0-2) 4 Credits**

Emerging technology-strategy relationship in the large corporation. Global technology comparison. Technology Information. Criticality of technology for growth, core competencies, R&D productivity, Generic competitive technology strategies. Corporate R&D, Strategic technology management process, relationship between technology strategy and corporate strategy. Strategic shifts and resource commitments, technology leadership. SWOT analysis for technology, Matching Business Portfolio and Technology Portfolio, Technology- Market matrix. Innovation and entry strategy.

CEL518 Earthquake Resistant Design of Structures**(3-0-2) 4 Credits**

Characteristics of earthquake, measurement of earthquake, dynamics of single degree of freedom system, earthquake response to single degree of

freedom system, response spectrum, earthquake resistant design concepts, response reduction factor, stiffness and building configuration, lateral loads, IS 1893 provisions for buildings, active and passive vibration control, dampers.

CEL519 Environmental Impact and Risk Assessment

(3-0-2) 4 Credits

Planning and Management of Environmental Impact Studies. Impact identification methodologies: base line studies, screening, scoping, checklist, networks, overlays. Prediction and assessment of impacts on the socio-economic environment. Environmental cost benefit analysis. Decision methods for evaluation of alternatives. Case Studies. Environmental impact assessment at project level, regional level, sectoral level, and policy level. Sustainable development: Environmental policy in planned, mixed and market economies; global environmentalism. Preventive environmentalism. Preventive environmental management

CEL520 Environmental Chemistry

(3-0-2) 4 Credits

Aquatic Chemistry: Chemical equilibria and kinetics fundamentals; Acids and bases; Titrations; Acidity; Alkalinity; Buffers and buffer intensity; Chemical equilibrium calculations; pC-pH diagram. Precipitation and dissolution; Water softening and water conditioning; Langelier index; Solubility diagram; Coexistence of phases in equilibrium; Complexation of metal ions and organic complexes in natural water. Oxidation and reduction reactions stoichiometry; Redox couples; pE-pH diagrams; Redox control in natural systems; Basic concepts of organic and colloid chemistry. Soil Chemistry : Weathering reactions; Structure and surface reactions of clays and oxides; Forces at soil-water interfaces. Atmospheric Chemistry : Chemical equilibria and kinetics; Photo-dissociation and free radical reactions; Chemistry of precipitation; Acid rain

CEL521 Water Supply Engineering

(3-0-2) 4 Credits

Review of public water supply requirements. Sources of water-Surface and subsurface water sources Quality of water-I: physio-chemical parameters of water Quality of water-II: Water microbiology and biology Quality of water-III: water quality standards for chemical, physical and microbiological parameters, processes of treatment, Flow measurement devices - Venturi, Orifice meters, weirs, flumes and gates. Pipeline distribution system

analysis and design.

CEL522 Industrial Waste Management

(3-0-2) 4 Credits

General Characteristics of Industrial Effluents, Effects on Environment - ISI tolerance limits for discharging industrial effluents into surface water, into public sewers and onto land for irrigation - Toxic chemicals from industry. Pretreatment of Industrial Wastewater: Necessity of pretreatment - Equalization - Segregation - Process Changes - Salvaging - By product Recovery. Removal by Reverse Osmosis, Ion Exchange, Electrodialysis, Solvent Extraction, Floatation.- Removal of Refractory Organics - Removal of Nitrogen and Phosphorus. Major Industrial Effluents: Sources, Characteristics and Treatment. Food Industries: Sugar, Dairy, Distilleries Chemical Industries: Paper and Pulp, Tanneries, Textiles, Fertilizers, Pharmaceuticals, Cement and Steel.

CEL523 Geo-Environmental Engineering

(3-0-2) 4 Credits

Sources and effects of subsurface contamination; Physical, chemical and biological characteristics of solid wastes; Soil waste interaction; Contaminant transport; Laboratory and field evaluation of permeability; Factors affecting permeability; Waste disposal on land case study; Landfills and impoundments types; Silting criteria; Waste containment principles; Types of barrier materials; Planning and design aspects relating to waste disposal in landfills; Soil exploration at contaminated site; Vertical cutoff walls; Cover system; Recovery well system; Bioremediation of soil ; In situ Bioremediation of ground water; Soil washing; Monitoring around landfills; Detection, control and remediation of subsurface contamination; Reclamation of old waste dumps; Regulations; Case studies; Engineering properties and geotechnical reuse of waste materials.

CEL524 Global Climate Change Adaptation and Mitigation

(3-0-2) 4 Credits

Introduction to global climate; Global climatic models; Methods of reconstructing climate; Quaternary climates, sea level changes, glacial/interglacial cycles; Geological records of climate change, sedimentology, stable isotopes, geochemistry; Geochronology - relative and numerical methods; Vegetation dynamics, migration history, response of vegetation to climatic reversals

CEL525 Wastewater Engineering**(3-0-2) 4 Credits**

Wastewater Characteristics, Standards of Disposal, Treatment Objective and, Strategies, Layouts of Primary, Secondary and Advanced Treatment Units. Design Of Preliminary and Primary Treatment Operations, Biological Treatment Processes: Types, Kinetics of Plug Flow and Completely Mixed Systems. Aerobic and Anaerobic Sludge Digestion Processes, Design of Digester Tank, Sludge Dewatering, Ultimate Disposal, Sludge Drying Beds, Other Methods of Sludge Treatment.

CEL526 Environmental Policy and Legislation**(3-0-2) 4 Credits**

Introduction: Economics and Environmental Policy Theory of externalities: Relevance. Externalities: definitions, significant types, and optimal pricing conditions, formal analysis Uncertainty and choice of policy instruments: price or quantity controls. Market imperfections and the number of participants. Detrimental externalities, and nonconvexities in the production set, optimal pricing of exhaustible resources Introduction to design of Environmental policy. Efficiency without optimality: the charges and standard approaches Marketable emission permits for the protection of the environment. Stochastic influences, direct controls, and taxes. Taxes vs subsidies: a partial analysis. Environment protection and the distribution of income International environmental issues, National and local standards for environmental quality

CEL527 Quality and Safety in Construction**(3-0-2) 4 Credits**

Introduction to quality management. Planning and control of quality during design of structures. Quality assurance during construction. Inspection of materials and machinery. Preparation of quality manuals, checklist and inspection report. Establishing quality assurance system. Quality standards/codes in design and construction. Concept and philosophy of total quality management (TQM). Training in quality and quality management systems (ISO-9000). Concept of safety. Factors affecting safety: Site management with regard to safety recommendations. Training for safety awareness and implementation. Formulation of safety manuals. Safety legislation, standards/codes with regard to construction. Quality vs Safety. Case Studies

CEL528 Functional Planning, Building Services and Maintenance Management**(3-0-2) 4 Credits**

Domestic Water Supply- House connection, water services to multistory buildings, Pipe materials, Jointing, Valves and taps; Building Drainage and Refuse Handling- Building drainage systems, drainage pipe materials, Jointing and testing, types of fixtures and fittings; Collection of refuse from buildings, refuse bins and sacks; Air Conditioning, Heating & Ventilation- Mechanical Ventilation, Air-Conditioning units & their working principles, Different types of heating materials; Lifts- Classification & Types of lifts, lift codes and rules, traffic analysis and selection of lifts, car speed, fire safety, arrangement of lifts; Acoustics- noise reduction, classification & selection of acoustical materials, acoustics of auditorium, schools etc.; Functional Planning & Maintenance Management- Planning of Services, Maintenance of lifts, water supply system, sewerage system

CEL529 Construction Planning and Management**(3-0-2) 4 Credits**

Introduction- importance of construction management, tenders and contracts- network techniques -quality and safety in construction; General overview of civil engineering projects, Procurement and contract management, Estimation and rate analysis, Project planning and its implementation, Construction Technology, Use of IT in construction, Software Application

CEL 601 Theory of Elasticity and Plasticity**(3-0-2) 4 Credits**

Concept of Elasticity - plane stress and plane strain analysis, two dimensional problems in rectangular coordinates - solution by polynomials - Saint Venant's principle-determination of displacements-bending of simple beams: application of Fourier series for two dimensional problems - gravity loading- Two dimensional problems in polar, analysis of stress and strain in three dimensions - differential equations of equilibrium - principle of super position - uniqueness of solution - the reciprocal theorem, torsion of prismatic bars - bars with elliptical cross sections - other elementary solution - membrane analogy - bending of prismatic bars, theory of plasticity - introduction concepts and assumptions - yield criterions.

CEL602 Matrix Methods of Structural Analysis**(3-0-2) 4 Credits**

General Introduction. A Few Historical Remarks. Matrix

Methods of Analysis of Skeletal Structures. Methods of Analysis. Displacement Method: Stiffness Relationships. The Matrix Displacement Approach, Introduction, Stiffness Matrix of a Bar Element subjected to Axial Force. Co-ordinate Transformations. Global Stiffness Matrix. Application to Pin-Jointed Frames. Stiffness Matrix of a Beam Element. Application to Continuous Beams. Matrix Displacement Analysis of Planar Rigid-Jointed Frames. Neglect of Axial Strain in the Analysis of Planar Rigid-Jointed Frames. Other Kinds of Loading & Other Kinds of Frames. Co-ordinate Transformations. Element Stiffness Matrix & its application. Matrix Displacement Analysis of Three-Dimensional Structures. Co-ordinate Transformations. Application to Space Trusses & Space Frames.

CEL603 Prefabricated Structures

(3-0-2) 4 Credits

Types of prefabrication, prefabrication systems and structural schemes- Disuniting of structures- Structural behaviour of precast structures. Handling and erection stresses - Application of prestressing of roof members; floor systems two-way load bearing slabs, Wall panels, hipped plate and shell structures. Dimensioning and detailing of joints for different structural connections; construction and expansion joints. Production, Transportation & erection- Shuttering and mould design Dimensional tolerances- Erection of R.C. Structures, Total prefabricated buildings. Designing and detailing prefabricated units for 1) industrial structures 2) Multistorey buildings and 3) Water tanks, silos bunkers etc.,4) Application of prestressed concrete in prefabrication

CEL604 Theory of Plates and Shells

(3-0-2) 4 Credits

Bending theory of flat plates: thin plates, Kirchoff theory - strain displacement relations, stresses and stress resultants, constitutive equations, equilibrium equations, boundary conditions, derivation of theory from principle of virtual work, rectangular plates-solution by double Fourier series, circular plates Classical theory of shells - Membrane theory of shells: equilibrium equations, applications to shells of revolution under axisymmetric loads, applications to cylindrical shells under asymmetric loads, strain-displacement relations, application in calculation of displacements; Bending theory of shells: kinematic assumptions and strain-displacement relations, stress measures and equilibrium

CEL605 Design of Tall Structures

(3-0-2) 4 Credits

Design philosophy - Loading - Sequential loading, materials. High risk behaviour, Rigid frames, braced frames, infilled frames, shear walls, coupled shear walls, wall - frames, tubulars, cores, futrigger - braced and hybrid mega system. Approximate Analysis, Accurate Analysis and Reduction Techniques - Analysis of building for member forces - drift and twist - Computerised general three-dimensional analysis. Structural elements- design, deflection, cracking, prestressing, shear flow, Design for differential movements, creep and shrinkage effects, temperature effects and fire. Overall buckling analysis of frames, wall - frames-second order effects of gravity of loading- simultaneous first order and P-delta analysis Translational - torsional instability, out of plum effects

CEL606 Flexible Systems Management

(3-0-2) 4 Credits

Emerging management paradigms: Total Quality Management, Business Process Reengineering, Learning Organisation, World Class Organisation, Flexibility in Management. Concept of systemic flexibility. Liberalisation, Globalisation and change. New Organisation forms. Concept and dimensions of Systemic flexibility. Managing paradoxes. Methodology and tools of flexible systems management. Underlying values, and guiding principles, Case Analysis using SAPLAP framework. SAP-LAP models and linkages

CEL607 Project Planning and Control

(3-0-2) 4 Credits

Work study, work break down structure, time estimates, application of CPM/PERT, statical concepts, Man-Material-Machinery-Money optimization, scheduling, monitoring, updating. Cost function, time-cost trade off, resource planning-levelling and allocation. Resources - based network, crashing, master network, interface activities, and dependencies, line of balancing techniques, application of digital computer. Material management- purchase management and inventory control, ABC analysis. Human resource management

CEL608 Advanced Methods for management research

(3-0-2) 4 Credits

Problem conceptualization and definition. Hypothesis formulation. Selection of Research Methods, Flexible Systems Methodology for preparing research design,

Scaling, sampling methods, Managing oral evidence, Questionnaire design, validation and pretesting. Interview design, Case study, Field experiments, Quasi experiments. Qualitative research methods. Statistical techniques and implementation of research plan using statistical packages.

CEL609 Organization Management

(3-0-2) 4 Credits

Manpower planning, organizing, staffing, directing. Organization -span of control, organization chart, development and operation of human resource, managerial staffing, recruitment, selection, placement, training. Human behavior - basic individual psychology, managing groups at work, leadership, behavioural aspects of decision making and communication for people management. Welfare measures - compensation, safety and health, GPF, EPF, group insurance. Management and development methods

CEL610 Advanced Wastewater Treatment

(3-0-2) 4 Credits

Microbiological concepts; cells, classification and characteristics of living organisms, characterization techniques, reproduction, metabolism, microbial growth kinetics and kinetics of biochemical operations; Modelling of suspended growth systems, techniques for evaluation of kinetic and stoichiometric parameters. Optimal selection of water and wastewater treatment chain, engineered systems, concepts and principles of carbon oxidation, nitrification, denitrification, methanogenesis. Biological nutrient removal: Anaerobic treatment (process options, components of anaerobic reactions that influence process design); Attached growth reactors (process description, design and applications). Decentralized wastewater treatment systems: Low cost options, constructed wetlands. Reliability and cost effectiveness of wastewater systems.

CEL611 Air Pollution and Control

(3-0-2) 4 Credits

Sources & Classification of Air Pollutants, Global effects, Sampling of Pollutants in ambient air, Meteorology and Air Pollution, Control of Particulate Pollutants, Design and operation of settling chambers, cyclones, wet dust scrubbers, fabric filters & ESP, Control of Gaseous Pollutants, Automobile Pollution and Control, Other Management controls, AP Legislation.

CEL612 Solid and Hazardous Waste Management

(3-0-2) 4 Credits

Municipal Solid Waste: Generation, Rate Variation, characteristics (Physical, Biological and Chemical); Management Options for Solid Waste, Waste Reduction at the Source, Collection techniques, Materials and Resources Recovery / Recycling. Transport of Municipal Solid Waste, Routing and Scheduling, Treatment, Transformations and Disposal Techniques (Composting, Vermi Composting, Incineration, Refuse Derived fuels, Landfilling). Norms, Rules and Regulations. Economics of the on-site v/s off site waste management options. Integrated waste management.

CEL613 Environmental Hydraulics and Hydrology

(3-0-2) 4 Credits

Basic concepts of open channel flows, conservation laws, continuity equation, momentum equation, Application of momentum and energy equations Critical flow, its properties and application; location of critical flow and its computation Uniform flow, flow resistance, equations of flow resistance, computation of normal depth, Gradually varied flow, governing equations classification of water surface profiles Rapidly varied flow, application of conservation laws, channel transition, supercritical flow, Hydraulic Jump Hydrologic cycle and its interaction with human activity, Hydrologic processes, Hydrologic analysis, Hydrologic statistics. Transport processes, diffusion phenomena, Fick's 1st and 2nd Laws of diffusion, Advection diffusion equation, turbulent diffusion and dispersion mixing in rivers Porous medium flow, Approximation of Dupuit, Contaminant transport, Saltwater intrusion into aquifers, non-aqueous phase liquid (NAPL) in groundwater, aspects of numerical modelling

CEL614 Environmental Modelling and Simulation

(3-0-2) 4 Credits

Sources and effects of water pollutants, introduction to principles of water quality modelling, distribution of water quality in rivers, estuaries and lakes, contaminant transport in groundwater, water quality modelling applications and discussion of case studies. Sources and effects of air pollutants, air quality standards, and emission inventory, meteorological aspects related to air pollution, air quality modelling and its application, trans-boundary air pollution.

CEL615 Environmental Remediation of Contaminated Sites**(3-0-2) 4 Credits**

The course details the usual remediation techniques practiced worldwide and provide an understanding of the relevant theoretical concepts. Hazardous waste law and risk assessment approaches-deterministic and stochastic, remediation of contaminated ground water by different techniques with relevant case studies - plume contaminants, Javandel et al approach, pump and treat, permeable reactive barrier. Natural attenuation mechanism with case studies, factors affecting the process, soil/ sediment contamination and remediation techniques - solidification and stabilization, TCLP approach, chemical treatment methods- in-situ and ex-situ, phytoremediation techniques.

CEL616 Environment & Ecology**(3-0-2) 4 Credits**

Environment and its concepts - nature of environment and components of environment, understanding of environment and ecology, methodological approaches for environment and ecology. Types of environments-micro level environment, natural resources conservation, man-made environment, natural environment. Environment ecology and quality of life. Environment economics - environmental crises, natural resource economics, social cost benefit analysis, sustainable development. Environment and ethics - globalization and environmental issues, ideologies for environmental management. Sustainable development - development and environment, ecological behaviour. Ecology, environment and management issues - corporate social responsibility, policy consideration. Environment and ecology - agenda for future.

CEL617 Advanced Design of RCC Structures**(3-0-2) 4 Credits**

Determination of deflection and crack width of RCC beams and slabs, moment redistribution in RCC beams, moment curvature relationship for RCC sections, design and analysis of deep beams and voided slabs as per IS 456, design of plane concrete walls and shear walls, analysis of frames under horizontal and vertical loads, drift analysis for tall buildings, introduction to design loads other than the earthquake loads such as wind loads and cyclone loads.

CEL618 Repair and Rehabilitation of Structures**(3-0-2) 4 Credits**

Corrosion of embedded metal bars in concrete, deterioration of cementitious systems, condition assessment of concrete structures, strategies and materials for surface repair, surface preparation and protective treatment, coatings on concrete infrastructures, waterproofing of concrete structures, structural strengthening & stabilization, injection grouts for concrete repair, case studies on structural repair, service life estimation.

CEL619 Structural Health Monitoring-NDT**(3-0-2) 4 Credits**

Introduction to structural health monitoring (SHM), necessity of SHM, components of SHM, challenges in SHM, advantages and components of SHM, SHM issues applied to concrete structures, uncertainties in SHM process, short term and long term SHM, local and global health monitoring, estimation of structural health using static SHM, SHM planning and management, SHM methods, damage identification using lumped mass and element modal stiffness, visual inspection method, NDT evaluation, sensor technologies, fiber optic sensors, acquisition system and networking for SHM, Artificial Neural Network (ANN) in the SHM process, damage detection, application of SHM in Infrastructure engineering.

CEL620 Contract Laws and Regulations**(3-0-2) 4 Credits**

Construction Contracts- Indian Contracts, Elements of Contracts, Types of Contracts, Features, Suitability, Design of Contract Documents; Tenders- Prequalification, Bidding, Accepting, Evaluation of Tender from Technical, Contractual and Commercial Points of View, Contract Formation and Interpretation, Potential Contractual Problems; Arbitration- Comparison of Actions and Laws, Agreements, Subject Matter, Violations, Appointment of Arbitrators, Conditions of Arbitration; Legal Requirements- Insurance and Bonding, Laws Governing Sale, Purchase and Use of Urban and Rural Land, Land Revenue Codes, Tax Laws, Income Tax, Sales Tax, Excise and Custom Duties and their Influence on Construction Costs; Labour Regulations- Social Security, Welfare Legislation, Laws relating to Wages, Bonus and Industrial Disputes, Labour Administration, Insurance and Safety Regulation.

CES500 Community Service

Community Service (CES500) is a non-credit course designed to foster a sense of social responsibility and community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

CES502 Community Service

Community Service (CES502) is a 2-credit course designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure. This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

CES600 Community Service

Community Service (CES600) is a non-credit course designed to foster a sense of social responsibility and community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

CES602 Community Service

Community Service (CES602) is a 2-credit course designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure (SOP). This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

CEV502 Skill based course**(3)**

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. This will be a specialized course chosen as per the need of the industry, with more emphasis on hands-on practice.

CET502 Industrial Internship**(7)**

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. Students need to undergo an industrial internship in the domain of their choice.

CHL100 Environmental Studies**3 credits (3-0-0)**

1) Application of knowledge gained to generate awareness for environmental protection to sensitize the student community towards environmental management and becoming Green Citizens and to apply the knowledge gained in sustaining various resources by using green technologies.

2) To apply the concepts learnt in maintaining balance in natural ecosystems and it covers all aspects of life and contributes in constructive decision-making keeping environment in view.

3) Development of understanding of pollution and to develop an understanding of Environmental management to enable them in becoming green engineers and green managers. To become green citizens and contribute in the sustainable development of the society, country and the world.

4) To apply the concepts learnt in earning resources for their organizations by using green technologies.

5) It encapsulates sound theoretical base of all the environmental aspects coupled with practical and projects.

Through this subject, students will be studying issues like pollution, global climate change, and the depletion of natural resources, students in Environmental Studies & Earth Sciences programmes focus on the most pressing environmental and ecological issues of today.

CHL150 Engineering Chemistry**(2-0-2) 3 credits**

Brief Syllabus: Fundamental of thermodynamic, Derivation of Entropy, Gibbs Helmholtz and Clausius Clapeyron Equation. Fuel and Combustion, Catalysis, Hardness and its determination by EDTA method, alkalinity of water, Softening and desalination of water. Chemistry of Engineering Material (Cement, Polymers, Alloys and Composites), Properties and classification of lubricants, Electrochemical corrosion, factor effecting and prevention methods of corrosion. Beer Lambert law, Principal, Instrumentation and application of UV

spectroscopy, IR, TGA, DTA. Conductometric titration.

CLC102 Seminar

(0-0-4) 2 credits

The B.A. weekly seminars will help students to acquire a strong understanding of recent literary trends and enhance their ability to conduct quality research. It will help them to develop their creative and critical faculties by assessing seminal literary texts across all genres through presentations that will be followed by discussions.

CLD302 Major Project

(0-0-12) 6 credits

B.A. Major Project is to demonstrate a depth of knowledge of Core English literature and Language. Students are required to conduct independent work resulting in a thesis at the end.

CLL103 -EFFECTIVE COMMUNICATION FOR LAW - I

4 Credits (3-1-0)

Grammar and Usage – Comprehension and Composition – Comprehension of Legal texts – Drafting of Reports and Projects – Legal Language – Legal Terms and Maxims – General guidelines relating to legal writing – Writing a Case Comment – Etiquettes and Manners for Law Professionals – Semantics; Morphology; Phonetics; Forensic linguistics.

CLL104 – EFFECTIVE COMMUNICATION FOR LAW - II

4 Credits (3-1-0)

Legal Professional Communication Skills – Verbal, non-verbal and paralinguistic communication – Written vs. Oral Communication – Barriers to communication and how to avoid them – Characteristics of the Language of the Law – Group Discussion – How to face an interview – Presentation techniques – Meetings: purpose; procedure; chairmanship; participation; physical arrangement – Hearing and Listening – Communication skills for advocacy – Literary Readings – Conversation Practice – Pronunciation; punctuation; correct usage and common errors; vocabulary; spelling rules; idioms.

CLL105 History of English Literature

(3-1-0) 4 credits

The present course helps students develop an understanding and appreciation of the historical and literary development since the time English started having acceptance as a language rather than a dialect in England. Beginning with understanding the social and cultural dynamics during the Age of Chaucer when Literature in English Language got written for the first time, it traces the development of English Literature to its peak during Renaissance in 16th Century and establishment as a major repository of literary and religious texts later on with the translation of Bible in English. It makes students interpret and analyze the related political, religious and intercultural concerns e.g. Peasant's Revolt, Renaissance, Humanism, Reformation, experiment with Commonwealth and restoration of Monarchy etc.

CLL106 Poetry-I (From Chaucer to Pope)

(3-1-0) 4 credits

The course British Poetry-I is designed to introduce the students to the rise of the poetry in English language. It covers the major trajectories of the early British poetry and enables the students to understand and appreciate the poetry from Chaucer to Alexander Pope. It introduces the student to one of the most beautiful forms of short poems i.e. Sonnet and the way different poets used it to communicate their thoughts and emotions in well-structured 14 lines and to the creation of the only English Epic- Milton's Paradise Lost and the epic tradition of writing poetry which led to the rise of another genre- Mock epic with A. Pope being the best practitioner of the craft.

CLL107 British Drama-I (16th-18th Century)

(3-1-0) 4 credits

The course British Drama is designed to introduce the genre of drama to the students and equip them with the ability to critically appreciate the text and its related technical aspects as well as performances. The works included in this domain are Christopher Marlowe Doctor Faustus, William Shakespeare Macbeth, John Webster The Duchess of Malfi, and William Congreve The Way of the World.

CLL120 Human Values and Professional Ethics

(2-0-0) 2 credits

Human values – Morals, Indian views on Education, Understanding harmony in self, family, society and the

existence; Self-exploration, Introduction to ethics, Ethical and Servant Leadership, Corporate Social Responsibility, Corporate governance – need and importance.

CLL130 Effective Communication-I

(1-0-2) 2 credits

The course includes introduction to business communication; semantics-I; functional aspects of language-I; reading skills-I; writing skills-I; listening skills-I and speaking skills-I.

CLL140 Effective Communication-II

(1-0-2) 2 credits

The Course includes business communication; semantics-II; writing skills-II; advanced reading skills; functional aspects of language -II; speaking skills-II and listening skills-II.

CLL200 French-I

(1-2-0) 3 credits

Introduce oneself and a friend/colleague or any other person, hobbies, leisure activities and daily routines, ask directions, to ask and to give personal information, give instructions, ask and tell time, understand a short and simple written passage, to organize, to accept or to refuse an outing/an invitation, leaving a message on the answering machine, place an order and pay in a restaurant, to speak about a near future plan and able to read a programme.

CLL201 Innovative Thinking and Positivity

(2-0-2) 3 credits

This course will help students to attain the ability to check the quality of thoughts and change them by knowing the thought process cycle, hence bringing transformation in attitude, behaviour, personality and destiny. This course will also support students to lead life with a solution-oriented approach to handle tough situations and learn meditation as a remedy to all our problems. Students shall overcome exam phobia or fear and develop optimism and positive mental attitude towards life and learn to lead a stress-free life by learning the art of conflict resolution.

CLL202 British Drama-II

(3-1-0) 4 credits

This course examines English-language plays written

since the mid-twentieth century, focusing on the social, political, historical and gender aspects. The course will also investigate how a set of important cultural discourses in contemporary society has influenced themes in dramatic texts especially in relation to identity and community formation. The British Modern drama includes T.S.Eliot: Murder in the Cathedral, George Bernard Shaw: Arms and the Man, John Osborne: Look Back in Anger, Harold Pinter: The Birthday Party.

CLL203 World Literature

(3-1-0) 4 credits

The course World Literature aims to acquaint the students with the history and culture of different countries in the world through their work and equip them with the ability to critically appreciate the texts. World Literature will familiarize the students with the thoughts, ideologies and waves in African-American Literature, European Literature and Canadian and African Literature. European Fiction will acquaint them with the works of Albert Camus The Outsider and Henrik Ibsen The Doll's House. African-American Literature will focus on poetry by Gwendolyn Brooks and fiction by Toni Morrison Sula. Canadian and African Literature will focus on the fiction by Margaret Laurence Stone Angel and poetry by Margaret Atwood, and a play by Wole Soyinka The Lion and The Jewel.

CLL204 Indian Writing in English

(3-1-0) 4 credits

This course will focus on ideas and the ways in which Indian literature in English reflects cultural and aesthetic values, placing due emphasis upon their discursive potential in the contemporary times. From the enormous possibilities in the source language, selections shall represent the genres of poetry, drama, the short story and fiction, texts shall be studied from the ancient to the contemporary times including works such as: Anita Desai In Custody, Girish Karnad Tuglaq, Manjula Padmanabhan Lights out, H.L.V. Derozio 'Freedom to the Slave' 'The Orphan Girl' Kamala Das 'Introduction', 'My Grandmother's House', Nissim Ezekiel 'Enterprise', 'The Night of the Scorpion', Robin S. Ngangom 'The Strange Affair of Robin S. Ngangom', 'A Poem for Mother'; Mulk Raj Anand 'Two Lady Rams', Salman Rushdie 'The Free Radio', Rohinton Mistry 'Swimming Lesson', Shashi Deshpande 'The Intrusion'.

CLL205 Poetry- II

(3-1-0) 4 credits

This course is designed to expand students' understanding and familiarity with various poetic

trends and movements prevalent during 19th and 20th centuries. Unit 1 and 2 specifically deals with first and second generation Romantic poets namely Blake, Grey, Wordsworth, Coleridge, Shelley and John Keats with their representative poems as examples of that particular trend. Victorian poetry has been represented by Tennyson, Browning and Christina Rossetti with their selected poems. Irish Movement and Spiritual Vacuum of 20th century British poetry is typified by exemplary works of Yeats, Auden and T S Eliot, thus familiarizing students with the best of British Poetry during 19th and 20th centuries and the various social and cultural changes that got underlined by the literary craft.

CLL206 British Novel – II

(3-1-0) 4 credits

The course British Novel – II aims to introduce the growth of British writings in Modern genre and equip students with the ability to critically appreciate the texts with respect to changing cultures and ideologies. The works included in this domain are Joseph Conrad Heart of Darkness, D.H Lawrence Sons and Lover, Virginia Woolf To the Lighthouse and William Golding Lord of the Flies.

CLL207 Popular Literature

(3-1-0) 4 credits

The course Popular Literature is designed to acquaint students to the popular segment of literary fiction, understand its culture and analyze the various genres which are the most well received by the masses. The works included in this domain are Lewis Carroll Through the Looking Glass, ShyamSelvadurai Funny Boy, Agatha Christie The Murder of Roger Ackroyd, and Ray Bradbury Fahrenheit 451.

CLL208 British Novel-I

(3-1-0) 4 credits

The course British Novel is designed to introduce the students to the rise of the novel. It covers the major trajectories of the early British novel and enables them to understand and interrogate the nineteenth century British novel. The texts included are Jane Austen Pride and Prejudice, Charles Dickens Hard Times, Emily Bronte Wuthering Heights and Charlotte Bronte Jane Eyre.

CLL210 FRENCH II

3 Credits (1-2-0)

The present course helps students develop an

understanding of familiar everyday expressions and complex sentences. ex give directions about a city / a country, tell time, position of the objects etc. They will be able to communicate in a simple manner, about their daily routine, order food in a restaurant, Learn to speak about their past & present habits, describe a situation in the past, develop the ability to compare past and present situations in conversations, invite someone and will be able to write a simple postcard, a mail to accept and refuse in recent past and near future.

CLL220 German-I

(1-2-0) 3 credits

Greetings, Self-introduction, Learning alphabets, start a conversation, numbers from 0 to 1000, order in a restaurant and pay the bill, asking questions ,verbs in present tense, articles in nominative, use of dictionary, articles in accusative, verbs in accusative, negation, nouns: singular and plural, listen to umlauts and speak, speak about cities and tourist features, about countries and languages spoken there, to indicate the geographical location, the past tense of the verbs, accent in questions and statements, time data- clock time/ week days, To fix up appointments, to excuse oneself on being late, prepositions related to time.

CLL230 GERMAN II

3 Credits (1-2-0)

Understand information given in a letter or text, write letters, understand and give simple instructions, understand advertisements, describe an apartment, reply to an invitation, express likes and dislikes, write a text about an apartment, describe one's daily routine, talk about past, understand job advertisements, voice opinion on jobs, converse on telephone and talk about work, talk about clothes, understand a chat about shopping, talk about past, making one's way in a shopping mall, understand information about Berlin, name body parts, understand and explain sports exercises, visit to a doctor, Grammar includes Dative case, Personal pronouns, prepositions, Adjectives etc.

CLL240 Modern European Drama

(3-1-0) 4 credits

This course is an attempt at broadening the horizons of the students and making them understand and appreciate various dramatic forms and themes being experiments with in Non-English speaking European countries. As a major literary trend 'The Theatre of Absurd' is represented by Eugene Ionesco's Rhinoceros and Samuel Beckett's Waiting for Godot. Ibsen's Ghosts and Bertolt Brecht's The Caucasian Chalk Circle serve to

expose the hidden fault lines in European societies and their dilemmas pertaining to justice, misuse of power, religion, class consciousness, family etc.

CLL250 British Prose

(3-1-0) 4 credits

The course British Prose focuses on reading and analyzing Essays in British literature and will be reviewed in relation to its historical, political, social, and artistic contexts and its relevance to our times. This course is meant to impart knowledge of the literature, thought and culture in England to students. It is assumed that students will understand the significance of Essays with the help of the texts chosen. Essays written by Francis Bacon a) Of Truth b) Of Revenge c) Of Anger d) Of Marriage and Single Line e) Of Friendship; Joseph Addison: Coverly Papers (First Five Essays); Edmund Burke a) Thoughts on the Cause of the Present Discontentments b) On conciliation; Charles Lamb 'The Convalescent', R.L.Stevenson 'An Apology for Idlers,' Virginia Woolf "The Death of the Moth."

CLL260 Partition Literature

(3-1-0) 4 credits

The present course helps students develop an understanding and appreciations of partition literature and analyze the related cultural and intercultural concerns. The works to be covered are Intizar Hussain, Basti; Khushwant Singh, Train to Pakistan; Short stories by Dibyendu Palit Alam's Own House, (tr.) Sarika Chaudhary Bengal Partition Stories: An Unclosed Chapter, Sa'adat Hasan Manto, 'Toba Tek Singh', in Black Margins: Manto, Poems by Faiz Ahmad Faiz "For Your Lanes, My Country", Jibananda Das, 'I Shall Return to This Bengal'

CLL270 Spanish-I

(1-2-0) 3 credits

Personal information, exchange greetings, understanding conjugations, using the verbs "to have", "to be", learn numbers 1-100, nationalities, professions, express intentions/interests, explain reasons for actions, use of Present Indicative, use of prepositions, description of places and countries, talk about climate, use of superlatives, expressing agreement, doubt, future and past tenses, gender and number of adjectives, identification of objects, expression of needs, asking prices/products, give and ask for information about someone, knowledge about the company, number of employees, ability to talk about the post or job of someone in a company, read a technical drawing with dictionary, Irregular verbs.

CLL280 SPANISH II

3 Credits (1-2-0)

This is an intermediate course for learning and understanding of Spanish language. It includes learning to develop advanced reading and writing skills of technical & non-technical texts and formulate projects. On the other side also build up social, professional conversation skills and understanding of the main points of clearly written, standard Spanish, as long as the text is related to things recreational activities. Learners will know how to interact in the majority of situations that may surface during the course trip throughout the regions where the language is spoken and will be able to produce simple and coherent texts on familiar subjects or on those in which he/she has a particular interest such as describing experience, events, desires and hopes, as well as briefly explain opinions or plans.

CLL301 American Literature

(3-1-0) 4 credits

The course American Literature aims to acquaint the students with the history and culture of America through its fiction and equip them with the ability to critically appreciate the text. Introduction of American Poetry and Drama will familiarize the students with the thoughts, ideologies and waves in American Literature. The works included in this domain are Mark Twain The Adventures of Huckleberry Finn, Ernest Hemingway The Old Man and the Sea, and Toni Morrison The Bluest Eye, Poetry by Walt Whitman, Emily Dickinson, Robert Frost and Sylvia Plath; Drama by Tennessee Williams and Eugene O' Neil.

CLL302 Post-colonial Literature

(3-1-0) 4 credits

The course offers an introduction to creative writing in English from countries formerly colonised by Britain. The course explores recent literary fiction, within the context of local histories, politics and cultural patterns, and their relations and reactions to colonial and postcolonial forces. Students will also be introduced to recent theoretical approaches to understanding post colonialism. Fiction: Chinua Achebe Things Fall Apart/ Amitav Ghosh The Hungry Tide; V.S Naipaul :In a Free State/ Phakir Mohan Senapati :Six Acres and a Third/ Rushdie :Shame; Short Fiction: Phakir Mohan Senapati: 'Rebati'/ Lakshminath Bebaro 'Bapiram', Bessie Head "The Collector of Treasures", Ama Ata Aidoo "The Girl Who Can". Poetry: Derek Walcott 'A far Cry from Africa', David Malouf 'Revolving days', A.K. Ramanujan 'Obituary', Jayant Mohapatra 'Life Signs'

CLL303 Literary Criticism-I**(3-1-0) 4 credits**

This course provides academic avenues by the major of English shall be led to the understanding the trajectory of Literary histories as theoretical precursors for the study of literary theory and criticism. The study includes Aristotle: Poetics, John Dryden: An Essay of Dramatic Poesy, Samuel Johnson: Life of Cowley, William Wordsworth: Preface to the Lyrical Ballads, 1800, P.B.Shelley: The Defense of Poesy, Mathew Arnold: The Functions of Criticism at the Present Times, T.S.Eliot: Tradition and Individual Talent.

CLL304 Women's Writing**(3-1-0) 4 credits**

The present course helps students develop an understanding and appreciations of the historical development of women's writing and interpret and analyze the related cultural and intercultural concerns. The works to be covered are: Mary Wollstonecraft: A Vindication of the rights of Women, Virginia Wolf: A Room of One's Own, Alice Walker The Colour Purple, ; Short Stories by Charlotte Perkins Gilman 'The Yellow Wallpaper, Katherine Mansfield 'Bliss', Mahashweta Devi 'Draupadi'; Poetry by Emily Dickinson 'I cannot Live Without You', 'I'm Wife; I've Finished That', Sylvia Path 'Daddy', 'Lady Lazarus', Eunice De Souza 'Advice to Women'

CLL305 Short Stories & Novella**(3-1-0) 4 credits**

The course Short Stories & Novella aims to familiarize the students with the socio - cultural domain of the texts and to interrogate its relation with the individual and society to which it belongs. The works of writers belonging to different continents have been included in this paper, such as, Oscar Wilde, O Henry, Chinua Achebe Gabriel García Márquez, Anton Chekov, Guy de Maupassant, Saadat Hasan Manto and Ruskin Bond.

CLL320 Introduction to Creative Writing**(1-3-0) 4 credits**

The course of Creative writing emphasizes on composing creative nonfiction, fiction, and poetry. In other words, students will study the main genres of creative writing to prepare them for upper level creative writing courses in fiction, creative nonfiction, and poetry.

CLL340 Film Studies**(3-1-0) 4 credits**

The course Film Studies aims to introduce the students to the nuances of cinema by studying various authors, popular cinema and cinematic adaptations of literary works. The works included in this course are by directors such as Robert Weine, de Sicca, Roman Polanski, Satyajit Ray, Chetan Anand, Basu Bhattacharya,FranciosTruffaut, Akira Kurosawa, and Francis Ford Coppola.

CLL360 Introduction to English Literature**(3-0-0) 3 Credits**

This course is essentially aimed at highlighting the way Literature voices human emotions and struggles through different forms such as Drama, Novel, Poetry and Short Stories and Non-Fiction Prose. An element of Cinema has been added to it to make it more relevant to present day students and make them appreciate the way written classics get translated on celluloid and still retain their literary qualities. Finally, a collection of short poems from across the world is added to acquaint the students with the lyricism, inherent musicality and thematic concerns of poets across the globe.

CLL370 Media and Communication**(3-1-0) 4 credits**

The present course helps students develop the professional ability to communicate information clearly and effectively in all contexts. They are introduced to key features of Mass Communication such as: Mass Communication and Globalization, Forms of Mass Communication, Social impact of Media on Public Opinion; Advertisements: Types of Advertisements, Advertising ethics, How to create advertisements/story boards; Media Writing: Script writing for T.V. and Radio, Writing News Reports and Editorials, Editing for Print and Online Media; Introduction to Cyber Media and Social Media: Types of Social Media, The Impact of Social Media, Introduction to Cyber Media.

CLL380 Gothic Fiction**(3-1-0) 4 credits**

One of the most influential and still current imaginative traditions in English literature, the Gothic specialises in the macabre, the horrifying, the sensational, and the fantastical. As part of this course, students study works by Edgar Allan Poe, Robert Louis Stevenson, Oscar Wilde, Bram Stoker, H.P. Lovecraft and Daphne du Maurier. The course will help them to understand the key elements of Gothic fiction and how the tradition

continues to the present times.

CLL500 Soft Skills

(1-0-0) 1 credit

The present course is aimed at equipping students with necessary Soft Skills to better prepare them to deal effectively with personal as well professional situations. It helps them learn life skills such as Time Management, Effective Body Language, Basic Etiquettes, Flexibility, Teamwork, Leadership and Professional skills through a number of workshops and class activities such as Group Discussions and Presentations in a guided environment.

CLL513 Professional Communication

(2-1-0) 3 Credits

Communication Process: Forms, Concepts, Process and Barriers to communication, 7 C's of Communication, Effective Cross- Cultural Communication; Oral Communication - Successful speaking and listening; Informative persuasive communication; Interpersonal communication, Presentations: preparation, methods, effective delivery of presentations, Prepared Speech Role Play activities; Semantics - Antonyms, Synonyms, Homonyms, Homophones, Spellings, Idioms and Phrases, One Word Substitution, Word Analogy, Foreign Words and Expressions (Select Word Lists); Reading Skills - Reading Comprehensions; Written Communication - Process of preparing effective business messages, Letters, Memorandum, E-mails, Basics of Report Writing; Short Reports, Public Relations Letters (letters of congratulations, appreciation, sympathy, season's greetings, offering favours or thanking for favours, etc.) Analytical Essay Writing Precise Writing.

CLP120 Creative Writing

(0-0-2) 1 credit

The course Creative Writing is designed to introduce the students to techniques used by writers to create effective pieces of writing. The students will be trained to write blogs, articles etc. and avoiding plagiarism. The students will also be trained for picture composition, story writing, critique writing, dialogue writing, advertisements & memoir writing. Each session will help them to hone their ability to think out-of-the-box.

CLR101/CLR102/CLR201/CLR202/CLR301/CLR302 General Proficiency

1 Credit

Extracurricular activities and general knowledge pursuits

are vital for a comprehensive education. They nurture skills like leadership, teamwork, and critical thinking outside the classroom. Engaging in

these activities enriches personal growth, broadens perspectives, and enhances readiness for future challenges. Therefore, General Proficiency has been included as a course in the B.A. (Hons.) English programme every semester, through which students are encouraged to participate in extracurricular activities organised within as well as outside NCU.

CLS101/CLS102/CLS201/CLS202/CLS301/CLS302 Community Service

2 credits

By participating in community service activities, NCU students contribute to social causes, foster empathy, and develop a sense of civic responsibility. As part of this course, students are expected to complete 140 hours of community service every academic year.

CLT201/CLT301 Internship

4 credits

Internships offer invaluable real-world experience, bridging the gap between classroom learning and professional practice. By immersing themselves in a working environment, NCU students gain practical skills, industry insights, and networking opportunities crucial for their future careers. These hands-on experiences not only enhance resumes but also empower students with a competitive edge in the job market.

CMD201 Minor Project

4 Credits (0-0-8)

Minor Project is a 3-credit course to be performed by the students of IIIrd semester of all UG programmes to keep them engaged and fresh with theoretical and practical knowledge that they have received in their first and second semester. Minor project shall also be done in a form of "Project on the Job Training". The purpose of this is to bridge the gap between job requirements and the present competency for an employee. The Minor project will be evaluated on the basis of the submitted report, presentation of the report during mid & final evaluation. At the end of the semester a soft bound project report should be submitted to the supervisor.

CMD302 Major Project

6 Credits (0-0-12)

Major project is considered to be a mini-thesis that the students have to submit to the University. Each student is allotted a faculty guide who acts as a mentor to the student and ensures that the projects reach a sensible conclusion. The students are asked to select a topic of their own interest or alternatively a topic jointly discussed and finalized by him/her and the respective mentor. The students are expected to study literature available on the topic and frame out objectives based on current research gaps for their capstone projects. The faculty guide facilitates the students in identifying the correct measurement tools or methodologies that can be used during their project and in carrying out & executing the research project through its various stages in order to reach a justifiable conclusion.

CML101/CML101A Professional Accounting

3 Credits (3-0-0)

Introductory Framework: Accounting as an information system, Bases of accounting, Basic concepts and conventions, Branches of Accounting, International Financial Reporting Standards (IFRS). Business Income: Measurement of business income -Net income; the accounting period, the matching concept, Revenue recognition, Salient features of Accounting Standard (AS 9) Recognition of expenses. Depreciation: Nature/ Methods of depreciation, Inventories; meaning, Significance of inventory valuation. Final Accounts: Capital and revenue expenditures and receipts: general introduction only. Preparation of financial statements: a) of non-corporate business entities from a trial balance; b) Of not-for-profit organizations. Lease Financing and Accounting for Dissolution of the Partnership Firm: Concepts of operating and financial lease (theory only). Creation of vouchers and recording transactions, preparing reports - cash book and bank book, ledger accounts, trial balance, Profit and Loss Account (Income Statement) and Balance Sheets. Introduction to Tally Software (latest version).

CML107 Introduction to Banking

3 Credits (3-0-0)

Fundamentals of Banking provides students with an overview of the history, purpose, and functions of banking. The course focuses on how banks serve the financial needs of individuals, businesses, and government in today's competitive environment. Students will compare financial services offered through traditional banking institutions with other financial intermediaries. Students will be able to understand fundamental banking concept and principles, the fundamentals of how banks

operate as a business, their obligation to operate in a safe and sound manner and manage risk, and the responsibilities of bank employees in a consumer-focused financial services environment. Students will be able to identify the financial statements that banks use and explain banks' business operations, from managing assets and liabilities to maximizing returns on loans and investments, as well as minimizing expenses and risks, monitoring financial performance, and planning for the future. Students will be able to explain how banks build relationships with customers by exceeding their expectations, what factors influence their purchasing decisions, and how both banks and their customers benefit from effective sales and marketing practices.

CML109 Business Laws

3 Credits (3-0-0)

Business law is the most demanding field in today's business scenario, as every business whether it is SME or MNC has to follow rules and regulations formed by the government. Cognitive approach toward legal aspect is must for every commercial concern. Objective of this course is to expose the student with legal business environment in India and an introduction to corporate law and to legal and non-legal governance mechanisms which encourage directions to act in their company's interests rather than their own. The business law course establishes a foundation to incorporate the more complex legal perspectives of the professional. A legal background is necessary in order to develop the business person's awareness of the interrelationship between government and business, to integrate legal considerations into managerial decisions, and to evaluate the costs and benefits of particular business alternatives. Business law course provides insight on law of contract and Companies Act 2013.

At the end of the course the student will have an understanding of Contract Act, Partnership Act, Negotiable Instruments, Environment Protection, IT Act and Companies Act. Legal aspects of business provide a better insight for taking business decisions. The course's outcome is to understand the different ways in which law can respond to these economic demands and problems.

CML120 Financial Literacy

3 Credit (2-0-2)

Financial literacy subject focuses on the ability to manage personal finance effectively, which requires experience of making appropriate personal finance choices, such as savings, insurance, real estate, college payments, budgeting, retirement and tax planning.

CML202 Income Tax and Practice**3 Credits (3-0-0)**

- 1) To know about various basic concepts used in Income tax Act
- 2) To acquaint the students with various sources of income tax
- 3) To understand the deductions, rebates and relief allowed under Income Tax Act
- 4) To make the students understand the machinery of income tax.

The course includes the broad topics like Income, agricultural income, person, assesses assessment year, previous year, gross total income, total income, maximum marginal rate of tax, Residential status. Income from Various Sources: Computation of Income under Salaries, Income from house property, Profits and gains of business or Profession. Capital Gain tax: Capital gains, Income from other sources, Total income and tax computation, Income of other persons included in assessee's total income. Deductions & Rebates: Deductions from gross total income, Rebates and reliefs, Computation of total income of individuals and firms, Tax liability of an individual and firm- Five leading cases of Supreme Court. Practice Sessions: Preparation of return of income, On-line filing of Returns of Income & TDS, Provision & Procedures of compulsory on-line filing of returns for specified assesses.

CML203 Fundamentals of Auditing**3 Credits (3-0-0)**

- 1) To make the students understand how the audit is conducted and the objectives of auditing.
- 2) To provide an insight towards auditor's responsibilities in auditing.
- 3) To provide an insight towards various types of audit and to understand auditing through case studies.
- 4) To verify and value various assets and liabilities.

Auditing: Basic Principles and Techniques; Classification of Audit, Audit Planning, Internal Control – Internal Check and Internal Audit; Audit Procedure – Vouching and verification of Assets & Liabilities; Company Auditor: Qualifications and disqualifications, Appointment, Rotation, Removal, Remuneration, Rights and Duties; Auditor's Report- Contents and Types, Liabilities of Statutory Auditors under the Companies Act 2013. Special Areas of Audit: Cost audit, Tax audit and Management audit; Recent Trends in Auditing: Basic considerations of audit in EDP Environment; Relevant Auditing and Assurance Standards (AASs).

CML204 Corporate Accounting**3 Credits (3-0-0)**

- 1) Understand the treatment of Share Capital and Debentures.
- 2) Understand the concept of Amalgamation and Internal Reconstruction.
- 3) Learn the role of Cash Flow statement.
- 4) Learn the treatments of Financial Statement

This course will introduce students with the different types of relationships amongst business entities and identify these relationships for financial reporting purposes. Helps in determining the 'reporting entities' for each inter-entity relationship, explain the appropriate accounting policy choices and demonstrating a thorough knowledge of relevant accounting standards and the ability to apply them to solve practical problems that arise from inter-entity relationships. Select the appropriate accounting techniques, as prescribed by the relevant accounting standards, and perform the accounting treatment for each type of inter-entity relationship (including preparing consolidated financial statements). They could discuss the strategic, legal, and assurance issues associated with establishing inter-entity relationships, and generate recommendations and communicate accounting policy choices and strategic recommendations and justify conclusions with reference to relevant laws and accounting standards.

CML 205 Statistics & Research Methodology**3 Credits (3-0-0)**

Course Outcomes

- 1) Student would be able to use summary statistics to describe data.
- 2) Student would be able to use probability theory and probability distributions in decision making.
- 3) Student would be able to perform basic statistical analysis using the concepts of correlation and regression.
- 4) Student would have the understanding of the sampling theory and sampling distributions.

The present course has been designed to familiarize the students with the nature and importance of statistical tools for data analysis in social science research. It starts with an introduction to the different types of statistics, levels of measurement, and concepts of population sampling. It covers various types of statistical techniques like measures of central tendency, dispersion and correlation. The course also introduces the students to methods of analyzing the differences between groups. Students will develop a comprehensive understanding of statistical concepts such as probability,

hypothesis testing, and regression analysis, empowering them to proficiently analyze data and draw meaningful conclusions in diverse research contexts.

CML206 Security and Investment management

3 credits (3-0-0)

This course is intended to provide a general overview of capital markets, financial instruments, and investment process. The course would emphasize the role of modern financial theory in portfolio management. The broad topics includes Overview of Indian financial system and financial intermediaries, Investment process, Intermediaries in financial market, Sources of financial information, Different investment alternatives, Approaches of bond valuation, Introduction to fundamental analysis. Technical analysis and efficient market hypothesis. Introduction to mutual funds and their risk evaluation and Role of SEBI.

CML 207 Financial Management

4 Credits (4-0-0)

Course outcomes:

- 1) To acquaint the students of management with the basic knowledge of finance function in a corporate enterprise and to get familiar with the various sources of raising finance.
- 2) To create an understanding how a firm can create value through its financing decisions.
- 3) To understand how the profits are distributed to maximize the wealth of shareholders.
- 4) To understand the long term and short term investment decisions taken in an enterprise

This course aims to equip the students with the fundamental principles & techniques of financial management concern with acquisition & use of funds by a business firm. Financial Management: Goals & objectives, Functions of financial managers, Concepts of risk and return, Environment of finance in organization of finance function, Introduction to time value of money. Capital Budgeting techniques: Nature and Features, Cash Flow Methods. Cost of Capital: Introduction Cost of Capital Cost of Debt, Cost of Preference Capital, Cost of Equity Capital, Weighted Average of Cost and Weighted Marginal Cost of Equity. Financial and Operating Leverage: Introduction, Meaning of Financial Leverage/Operating Leverages and its Calculation. Cost of Capital: Introduction; Cost of Capital; Cost of Debt, Cost of Preference Capital, Cost of Equity Capital, Approaches to Derive Cost of Equity, Weighted Average Cost of Capital and Weighted Marginal Cost of Capital. Capital Structure: Theory & Practice, EBIT, EPS Analysis

and its theories. Working Capital Management: Cash, Receivables and Inventory Management and Financing. Dividend decisions & policy, Sources of Finance: Long/ Short term financing. Ratio Analysis: Calculation of different ratios.

CML301 Cost Accounting

3 Credits (3-0-0)

- 1) Gain understanding of basic cost and key components.
- 2) Gain understanding of various costing techniques i.e. Job costing and process costing and contract costing.
- 3) Comprehend information required for cost accumulation and assignment for calculation of work-in-progress.
- 4) Gain understanding of allocation of Labour cost and functional analysis of overheads.
- 5) Comprehend information required for cost audit.

Cost Accounting Methods and Systems: Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting. Cost concepts and classifications, Elements of cost. Installation of a costing system. Role of a cost accountant in organization. Cost Sheet: Preparation of Cost Sheet (Simple Problems) Process Costing: Meaning and Computation of normal profits, abnormal effectives and abnormal loss. Contract Costing: Contract meaning, types, Job and Batch Costing, preparation of contract accounts, escalation clause, calculation of Work-in-progress, accounting for material: accounting for plant used in a contract; contract profit and loss account, balance sheet. Labour Cost: Attendance and Payroll procedures, Over time, idle time and incentives, direct and indirect labour, remuneration systems and incentive schemes. Overheads: Functional analysis- Factory, administration, selling, distribution, research and development, fixed, variable, semi variable and step cost; Factory overheads, Administration overheads and Selling and Distribution overheads in brief. Cost Accounting Records and Cost Audit: Cost Accounting Records and Cost Audit under Companies Act, 2013, Nature and scope of Cost Audit Companies (Cost Records & Audit) Rules, 2014.

CML302 Management Accounting

3 Credits (3-0-0)

- 1) Understand the role of management accounting in managerial decision making
- 2) Comprehend information required for cost accumulation and assignment for managerial

planning and control.

3) Analyse information for decision making

Management accounting: Meaning, nature, scope and functions of management accounting, role of management accounting in decision making. Financial statements: meaning, limitations of financial statements, objectives and methods of financial statements analysis, ratio analysis, classification of ratios – profitability ratios, turnover ratios and financial ratios, advantages of ratio analysis, limitations of accounting ratios. Fund flow statement, Cash flow statement (As per Indian accounting standard-3). Absorption and marginal costing: Marginal and different costing as a tool for decision making, make or buy, change of product mix, pricing, break-even analysis exploring new markets, shutdown decisions. Standard costing: Meaning, Concepts and Objectives, Merits and Demerits of Standard costing, Prerequisite for establishment of standard costing, Efficiency and Activity Ratios, Variance Analysis and Control.

Project: Students are expected to select a company and Perform cost analysis of that company, prepare a report and make presentation in the class. Live cases cost accounting reports attached to annual reports should be analyzed.

CML303 Indirect Taxation (GST)

3 Credits (3-0-0)

- Understand the procedure of levy of various types of indirect taxes like, excise duty, customs duty (import and export), production linked tax, and Value Added Tax (VAT).
- Enumerate sources of indirect taxes applicable in India.
- Understand the concept of GST in India.
- Understand the rules related to levy of goods and services taxes on various business entities.

Central Excise, Services and VAT: Central Excise Act, 1944 and the related Rules, Central Excise Tariff Act, 1985 and the related Rules. Law relating to service tax as contained in the Finance Act, 1994 as amended from time to time and the related, Service tax – concepts and general principles, Charge of service tax and taxable services, Valuation of taxable services, Payment of service tax and filing of returns, Issues related to Value Added Tax. Customs: Customs Act, 1962 and the related Rules, Circulars and Notifications; Customs Tariff Act, 1975 and the related Rules. Introduction of GST: Overview of GST, Levy of and Exemption from Tax, registration, Scope and Meaning of Supply, Time of Supply. Valuation of GST: Valuation in GST, Payment of GST, Electronic Commerce, Job Work, Input Tax Credit,

Input Service Distribution, Matching of Input Tax Credit, Overview of the IGST ACT, Place of supply of Goods and Services.

CML304 Micro Finance

3 Credits (3-0-0)

- 1) Understand the rationale of Micro Finance.
- 2) Understand the Financial & Operational Evaluation
- 3) Learn the trends and frontiers of Micro Finance.

This course will introduce students the concept of Micro credit and Micro finance. Features and Benefits of Micro Finance. Important role of Micro Finance and why it is needed. Micro Finance refers to the provision of affordable financial services such as small loans, small savings, micro insurance, and funds transfer facilities extended to socially and economically poor and disadvantaged segments of the society to enable them to increase their income levels and improve their standard of living. The main aim of microfinance is to provide small loans to poor people particularly living below poverty line, who are not able to raise loan for productive purposes from other sources and to improve their standard of living by increasing their earnings and saving covering associated risks.

CML305 Securities Operations and Risk Management

3 credits(3-0-0)

Course Objectives

- 1) To Understand the basics of the Indian securities market AND the role of the Securities Exchange Board of India.
- 2) Explain the functioning of members and the steps and participants involved in the trade life cycle.
- 3) Discuss the risk management practices in a securities broking firm and analyze the clearing and settlement process.
- 4) Analyze the process of investor grievances redressal.

The course seeks to create a common minimum knowledge benchmark as the requisite standard for associated persons of a registered stockbroker / trading member / clearing member in recognized stock exchanges, involved in (a) assets or funds of investor or clients (b) redressal of investor grievances, (c) internal control or risk management and (d) activities having a bearing on operational risk.

CML 306 Mutual Fund Distributors**3 credits(3-0-0)**

Course Outcomes-

- 1) Understand the basics of mutual funds, their role and structure, different kinds of mutual fund schemes and their features.
- 2) Explain how mutual funds are distributed in the market-place, how schemes are to be evaluated, and how suitable products and services can be recommended to investors and prospective investors in the market.
- 3) Discuss the legalities, accounting, valuation and taxation aspects underlying mutual funds and their distribution.
- 4) Evaluate the financial planning as an approach to investing in mutual funds, as an aid for mutual fund distributors to develop long term relationships with their clients.

The course seeks to create a common minimum knowledge benchmark for all persons involved in selling and distributing mutual funds including Individual Mutual Fund Distributors, Employees of organizations engaged in sales and distribution of Mutual Funds, Employees of Asset Management Companies specially persons engaged in sales and distribution of Mutual Funds. It aims to enhance the quality of sales, distribution, and related support services in the mutual fund industry.

CML 307 Fundamental and Technical Analysis**3 credits(3-0-0)**

Course Outcomes-

- 1) To sensitize the student to the principles underlying Fundamental Analysis.
- 2) To enable the student to recognize and comprehend Fundamental analysis concepts, procedures and uses.
- 3) To enable the student to recognize and comprehend a broad range of technical analysis concepts, procedures and uses.
- 4) To have the student begins to develop a repertoire of technical tools, concepts, and procedures which are best suited to their particular investment/money management goals.

The course will deal with basic approach and steps in fundamental analysis, methods of valuation and technical analysis of stocks to determine the right investment strategy. Other included topics are -Industry analysis, technical analysis, and usage of technical indicators to determine appropriate

buying and selling signals.

CML 308 Equity Derivatives**3 credits(3-0-0)**

Course Outcomes

- 1) Understand the basics of the Indian equity derivatives market.
- 2) Explain the various trading strategies that can be built using futures and options on both stocks and stock indices.
- 3) Discuss the clearing, settlement and risk management as well as the operational mechanism related to equity derivatives markets.
- 4) Evaluate the the regulatory environment in which the equity derivatives markets operate in India.

The course aims to enable a better understanding of various derivatives products available in equity derivatives markets, regulations and risks associated with the products and the exchange mechanisms of clearing and settlement. The course also covers knowledge competencies related to the understanding of the financial structure in India and the importance of the different rules and regulations governing the Indian securities market, especially those related to the equity derivatives segment.

CML 309 Behavioral Finance**3 Credits(3-0-0)**

Course Outcomes

- 1) Understand and analyze some psychological biases which lead to various anomalies in stock market.
- 2) Understand and analyze investors' behavior in secondary markets.
- 3) Evaluate the implications of endowment, disposition, etc.in stock market.
- 4) Analyze & evaluate the impact of emotions on the financial decision making.

The objective of this paper is to introduce the students to the role of human behavior in financial decision-making. It discusses the various biases, Equity Premium Puzzles, and arbitrage opportunities.

CML352 Financial Econometrics**3 credits (3-0-0)**

This course provides a comprehensive introduction to basic econometric concepts and techniques. This course will help student to understand issues in connecting data, statistics and theory. The approach would be hands-on practice to help students get comfortable with working with dataset. The main contents of this course are introduction to econometrics, simple linear regression model (concepts, estimation, properties and testing of hypothesis), multiple regression models, functional forms and testing for model specification, identifying and correcting for violation of CLRM assumptions, dummy variables.

CML353 Corporate Restructuring, Mergers & Acquisitions**(3-0-0) 3 Credits**

This course examines the process by which business takeovers and other corporate control transactions take place and the role of restructuring and shifts in resource allocation by corporations. A major focus of the course will be on valuation of, and accounting for, Mergers & Acquisitions. Also, of particular interest will be the examination of economic and capital market reactions to control transactions and to defensive measures by management against takeover bids. A limited range of cases on mergers and acquisitions will be presented and discussed.

CML354 International Finance**3 credits (3-0-0)**

This course intends to provide an overview of the international finance including forex markets, risks and various avenues on investment. Discuss about foreign exchange markets and international financial markets. The student will be able to understand the various instruments traded in forex markets, analyze international investment avenues, analyze foreign exchange risks and risk management strategies and evaluate and manage foreign exchange risk exposure

CML355 Project Appraisal and Finance**3 credits (3-0-0)**

This course provides comprehensive knowledge to students about concepts like identification of a project, feasibility analysis including market, technical and financial appraisal of a project. It also enables to understand the relevance of alternative project appraisal techniques, financial structuring, and financing

alternatives. The student will be able to understand the basics of Project management and Project development cycle, In addition, he will be able to examine the various financial Projections and methods of financial appraisal and understand the role of Project Managers and formulate an overall view of modern project management. Evaluate the various Techniques in Project Control and Performance Analysis.

CML356 Financial Services**3 credits (3-0-0)**

The course will delve deeper into the intricacies of overseeing financial institutions and services. Covering topics such as leasing, factoring, forfeiting, venture capital financing, securitization, mutual funds, discounting and dynamics of derivatives, this course equips students with the skills and knowledge necessary to navigate the complex landscape of financial services. Through case studies and real-world applications, students learn to analyse market trends, develop innovative solutions, and optimize operational efficiency within the financial services industry. With a focus on ethical practices and emerging technologies, this course prepares students for leadership roles in banking, insurance, investment, and other financial sectors.

CML357 Strategic Business Leader**3 credits (3-0-0)**

Strategic Business Leader covers a blend of technical, ethical and professional skills. It tests the ability of the student to work in a stimulated real-life scenario. The syllabus brings together the core areas of Governance, Risk and Strategy, Leadership and Organisational control, change management as well as technical areas like data analytics.

1. To understand the principles applicable to a business entity and recognize the ethical framework that managers need to adopt while discharging their duties.
2. Identifies the various professional skills that a professional manager needs to acquire and apply along with the application of the knowledge, skills and expertise required to assess the business strategies and their impact on business performance.
3. To equip students with the tools & techniques of assessing strategic position, develop strategic choices and implement the chosen strategy through change management.
4. Identify the technologies required for the business entity and use of data analytics for decision making.
5. Equip students with the tools & techniques of

assessing strategic position, develop strategic choices and implement the chosen strategy through change management.

CML358 Strategic Business Reporting

3 Credits (3-0-0)

1. Understand the importance of Conceptual Framework and discuss the importance of professional and ethical behaviour in corporate reporting
2. Generate report on the financial performance and position of entities in the context of various accounting issues discussed in IAS/IFRS
3. Preparing consolidated financial statements which involve transactions with foreign group entities
4. Examine the implications of current issues in the context of social, environmental, national and international corporate financial reporting.
5. Examine and interpret the implications of changes in accounting regulations on financial reporting

The module requires you to establish your ability to make strategic business reporting decisions. The aim of the syllabus is to evaluate, discuss and apply the concepts, principles and practices that support the preparation and interpretation of corporate reports in various contexts including the ethical assessment of management's stewardship and the information needs of a diverse group of stakeholders. The syllabus requires students to examine corporate reporting from several standpoints, not only from the point of view of the preparer of corporate reports but also from the perspective of a variety of different stakeholders such as investors and finance providers. The syllabus further requires the evaluation and assessment of the reporting decisions made by management and their implications for a range of stakeholders and any entities.

CML359 Advanced Financial Management

3 Credits (3-0-0)

1. Explain and evaluate the role and responsibility of the senior financial executive or advisor in meeting conflicting needs of stakeholders and recognise the role of international financial institutions in the financial management of multinationals
2. Evaluate potential investment decisions and assessing their financial and strategic consequences, both domestically and internationally
3. Assess and plan acquisitions and mergers as an alternative growth strategy
4. Evaluate and advise on alternative corporate re-

organisation strategies

5. Apply and evaluate alternative advanced treasury and risk management

Course Description: The aim of the syllabus is to apply relevant knowledge, skills and exercise professional judgment as expected of a senior financial executive or advisor, in taking or recommending decisions relating to the financial management of an organization in private and public sectors. This syllabus develops upon the core financial management knowledge and skills covered in the Financial Management syllabus and prepare candidates to advise management and/or clients on complex strategic financial management issues facing an organization.

CML361 Advanced Audit and Assurance

3 Credits (3-0-0)

1. Demonstrate the ability to work effectively and efficiently on assurance and other service engagement within a professional and ethical framework and develop the knowledge, competence, skepticism and skills of an auditor
2. Assess and recommend appropriate quality control policies and procedures in practice management and recognise the auditor's position in relation to the acceptance and retention of professional appointments.
3. Identify and formulate the work required to meet the objectives of audit assignments; apply the International Standards on Auditing; evaluate findings and the results of work performed and draft suitable reports on assignments.
4. Identify and formulate the work required to meet the objectives of non-audit assignments.
5. Understand the current issues and developments relating to the provision of audit-related and assurance services.

The aim of Advanced Audit and Assurance is to analyze, evaluate and conclude on the assurance engagement and other audit and assurance issues in the context of best practice and current developments.

CMR101 GP-I

1 Credits

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMR102 GP-II**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMR201 GP-III**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMR202 GP-IV**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMR301 GP-V**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMR302 GP-VI**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

CMS101 Community Service (CS-I)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct

various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMS102 Community Service (CS-II)**2 Credits**

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMS201 Community Service (CS-III)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMS202 Community Service (CS-IV)**2 Credits**

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU

undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMS301 Community Service (CS-V)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMS302 Community Service (CS-VI)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CMT301 Summer Internship

4 Credits (0-0-8)

Summer Internship is to be performed in the summer break (May-July) by the students to keep them engaged as well as to learn the practical usage of what they

have learned. Each student must do an internship in a registered company, the duration of the internship is min 4-6 weeks for UG students and Min 6-8 weeks for PG students.

CSC301 Seminar

1 Credit (0-1-0)

Independent study on any latest trend in communication technology or any recent research field. Students are evaluated on individual basis on the parameters like content of the topic, delivery, presentation techniques and viva-voce.

CSC501 Seminar

(0-0-4) 2 Credits

Research and development seminar based on problems of practical and theoretical interest. Evaluation will be based on student seminars, written reports, and evaluation of the developed system and/or theories.

CSD401 Major Project

4 Credits

Development of a technical project, research and simulation or hardware implementation of new or recent technological trend under the guidance of faculty. Complete literature survey, feasibility testing, circuit design, component arrangement etc.

CSD402 Major Project/ Internship

6 Credits

Completion of Project with good hardware which has Financial Viability, Originality-innovativeness, Customer end applicability, Usefulness to society- addressing a larger section, Sustainability or simulation results with good research paper and report of complete project with appropriate results and conclusions undertaken as ECD405. A full 14 week internship can be done in lieu of major project part B which has to be approved prior to start and evaluated after completion.

CSD501 Minor Project

(0-0-8) 4 Credits

A significant project to be carried out for partial fulfillment of the PG diploma/ degree.

CSD601 Dissertation-I**(0-0-8) 4 Credits**

Completion of project, Dissertation and report undertaken as CSD601

CSD602 Dissertation-II**(0-0-24) 12 Credits**

Completion of projects and report undertaken as CSD602

CSL106N FOCP-I**(2-1-4) 5 Credits**

This course introduces the intrinsic concepts of programming language that helps the students to mutate from one language to another in future. It provides the sagacity of procedural programming approach applied in C programming language. It fully covers fundamental programming techniques with the most common library functions and the usage of the preprocessor. Through this course, students will be able to fathom all the pivotal concepts, syntax and semantics of C language as well as data types offered by the language. They will be able to write the code of a programme by developing logic with progression to writing pseudo codes, designing flowcharts and finally developing management projects

CSL108N FOCP-II**(2-1-4)5 Credits**

This course provides an introduction to the C++ programming language, covering its syntax, semantics, and fundamental concepts. Topics include data types, control structures, functions, classes, object-oriented programming principles, memory management, and standard library usage. Emphasis will be placed on practical application and understanding of C++ programming concepts.

CSL110 Problem Solving and Design Thinking**(2-0-2) 3 Credits**

Meet Design Thinking, Stimulating the mind from different angles, In and Out of Box Thinking Mastering the art of critical, Experimentation with mapping tools, creating personas, Design thinking principles, Creating Storyboards, Preparing the mind for innovation and generating ideas.

CSL209 Data Structures**(3-0-2) 4 Credits**

Data Structures Introduction, Types of data structures, Linear and Non-linear data structures, Array traversal, Linear and Binary search, Linked list introduction, Insertion and Deletion, Doubly Linked list, Circular Linked list, Stack operations, Polish Notations, Introduction to Queues, Circular Queues, Doubly ended queues (Dequeues), Priority Queues, Introduction to Binary Trees, Expression trees, Tree traversal: Inorder, Preorder & Postorder, AVL Trees, Insertion and Deletion, B Trees, Introduction to Graphs, Representation, Graph traversal: Breadth First Search & Depth First Search, Sorting Algorithms, File Organization: File representation on hard disks, Indexing and Hashing techniques, Linear probing & Quadratic probing.

CSL214N Database Management Systems**(3-1-2)5 Credits**

Databases form the core of all major applications – finance, social, administrative, education etc. Organizations work on large volumes of data every day, introducing the need of database management systems to easily identify, extract, store and transform details in the database. This course will explore concepts and principles of DBMS, database design, data modeling, database implementation, and database management through various assignments and experiments. By the end of this course, the student will be able to work as a database engineer by designing, developing and maintaining the database for any project application.

CSL215 Introduction to Java**(2-0-4) 4 Credits**

This course introduces Java, one of the most in-demand programming languages. Designed for beginners with little or no knowledge about Object Oriented programming concepts, this course covers the core OOP concepts including Encapsulation, Polymorphism, Inheritance etc. and their implementation in Java. In this course, the students will have extensive hands-on experience writing, compiling, testing and executing Java programmes applying the above principles for developing modular reusable programmes. By the end of this course the students will gain the foundational skills a software engineer needs, to solve real-world problems, from designing algorithms to testing and debugging; and will be able to apply these concepts to build their own interactive Java applications.

CSL225 Programming for Data Science**(2-0-4) 4 Credits**

Course Introduction: What is Data Science Environment Set-Up-Anaconda Jupyter Overview Core Programming Principles built-in data types, conditional constructs, looping constructs, logical expression, control statements, Fundament also of Python Interpreter, Programme Execution, Statements, Expressions, Flow Controls, Functions, Numeric Types, Sequences, Strings, Tuples, Lists and Class Definition, Constructors, Inheritance - Overloading, Text & Binary Files - Reading and Writing ,Python for Data Analysis, NumPy, Pandas - Matrices and Data, Frames, Visualization in Python, (Matplotlib, Seaborn Pandas Built-in Data Visualization Advanced Visualization in Python,Plotly and Cufflinks Geographical Plotting.

CSL227 Applied Computational Statistics**(2-0-4) 4 Credits**

Introduction to Classical (Frequentist) Statistics Types of Data (Quantitative, Qualitative, Logical), Exploratory Data Analysis (Histogram, Scatter plots, Box plots...), Fundamentals of Descriptive Statistics (moments- Measures of Central Tendency, Measure of spread, Measure of Shape), Markov Chains, LATEX, Probability and Combinatorics: Sample Statistics and Population Parameters, Events (Mutually Exclusive, Disjoints, Independent...), Counting Methods Permutations and Combinations), Joint, Conditional Probability, Bayes' Rule, Discrete Distributions Introduction, Probability Mass Function, Cumulative Distribution Function, Geometric Distribution, Binomial Distribution, Poisson Distribution, Continuous Distributions: Probability Density Functions, Cumulative Distribution Function, Inferential Statistics (Normal Distribution, Statistical Sampling, Central Limit Theorem), Estimations (Point and Intervals-Confidence intervals with means, sample, proportions) Hypothesis Testing :Introduction, Confidence Intervals, Critical Value based approach, P-value based approach, ZTests, TTests ,the 2 distribution, ANOVA/ANCOVA.

CSL229 Software Engineering and Project Management**(3-0-2) 4 Credits**

Software practices, Process models and Agile Practices, SDLC, Process models: Linear, Spiral, Unified etc. ,Agile Process model, Extreme Programming , Scrum, Requirement analysis, Design process, Coupling, Cohesion, Structured analysis, Structured Design, Data flow design, Object Modelling using UML, Unit testing, Black box testing, White box testing, Integration testing, System testing, Stress testing, Regression testing, Project monitoring, Risk management, Six Sigma, Resource

allocation, Project evaluation and estimation, Software metrics, Metrics for project size estimation: COCOMO and Function point analysis

CSL230 Analysis and Design of Algorithms**(3-0-2) 4 Credits**

Introduction and foundations :Role of algorithms in computing, Algorithms as technology, analyzing and designing algorithms, Growth of Functions, Asymptotic notations, Recurrences, Substitution method, Recursion tree method, Master method ,Divide and Conquer :General method, binary search, merge sort, quick sort, selection sort, heap sort, Strassen's matrix multiplication algorithms and analysis of algorithms for these problems. Greedy Method: General method, knapsack problem, job sequencing with deadlines, minimum spanning trees (Kruskal's Algorithm, Prim's Algorithm), Shortest path algorithm (Dijkstra's Algorithm, All pair shortest path) and analysis of these problems. BFS, DFS, Activity selection problem Dynamic Programming: General method, Principle of optimality, 0/1- knapsack, the traveling salesperson problem, Optical binary search tree. Backtracking: General method, 8-queen's problem, subset sum problem, Graph Coloring, Hamiltonian cycles, analysis of these problems, Branch-and Bound: Introduction to Branch and Bound, LC search and FIFO search, 0/1- knapsack and traveling salesperson problem, efficiency considerations, NP and NP complete: Basic concepts, Cook's theorem, NP hard graph and NP scheduling problems some simplified NP hard problems.

CSL232 Business Intelligence & Data Visualization**(2-0-4) 4 Credits**

Introduction to Business Intelligence and BI Tools, Data Science with BITools, Data Visualization, Fundamentals, Evaluate the quality of data, visualizations and build high quality visualizations. Design Principles, Implement the best design practices, and to use the most appropriate chart for a particular situation, Creating Visualizations in Tableau ,Introduction to Tableau, Build data visualizations in Tableau., Use data hierarchies, filters, groups, sets, and calculated fields, Create map-based data visualizations in Tableau. Telling Stories with Tableau, Build interactive Tableau dashboards, Tell impactful stories using data. Advanced Data Mining With Tableau.

CSL236 Introduction to Artificial Intelligence & Machine Learning**(3-0-2)4 Credits**

Introduction to artificial intelligence, Overview of machine

learning, techniques in machine learning, deep learning, differences between deep learning, machine learning and AI, Data Preprocessing, data cleaning, data transformation: standardization and normalization, data smoothing, dimensionality reduction, different encoding schemes for categorical and numerical features, Regression Techniques , K Nearest Neighbors, Support Vector Machine, Kernel SVM, Naïve Bayes, Decision Trees Classification, Random Forest Classification, Overfitting, Underfitting, Bias and Variance model, Bootstrapping, Cross-Validation and Resampling Methods, Performance Measures: Confusion matrix, ROC.

CSL238 Introduction to Cloud Computing

(2-0-4) 4 Credits

Cloud Computing Overview, Cloud Computing definition and characteristics (elasticity, multi-tenant, on-demand, ubiquitous access, usage metering, self-service etc.), General Benefits and Architecture, Business Drivers, Main players in the Field, Cloud service models/types (public, private, hybrid, and community clouds), Overview of Security Issues, Cloud deployment models (IaaS, PaaS, SaaS, Paas) and XaaS Cloud Based Service Offerings, EC2, SimpleDB, S3, Simple Queue, Simple Relational Database, Elastic MapReduce, Virtual Amazon Cloud. S3 Command Line tool, AWS APIs, MapReduce, HIVE, Microsoft Cloud Platform, Google cloud Platform.

CSL239 Mathematics of Modern Cryptography

(2-0-4) 4 Credits

Modern Cryptography deals with the mathematics behind the theory of public key cryptosystems and digital signature schemes. This course will cover essentials of cryptography topics that relate to blockchain technology and provide exposure to the students about the events or transactions that are secured cryptographically in blockchain. In this course, students will develop a thorough understanding of the mathematical foundations on which modern public-key cryptosystems are based. It will cover the core cryptographic techniques with an emphasis on those parts more relevant to Blockchain. The course will include concepts like public-key cryptography, hashing, and Merkle trees etc which are used for wallets, transactions, security, and privacy-preserving protocols in blockchain.

CSL240 Computer Networks

(3-0-2) 4 Credits

Physical layer, Datalink layer, Network Layer, Transport Layer, Application Layer, Software Defined Networks, Need for SDN, Architectural components, Control and Data Plane Separation, Applications. IoT Network -

Framework, Enabling Technologies, IoT Gateways and Protocols. Cloud based Networks- Virtualization, Virtual Private Cloud, Storage Area Network, Network Attached Storage.

CSL242 Artificial Intelligence for Games

(3-0-2)4 Credits

Introduction to AI in games, vector mathematics in games, creating a character using vectors, making character travel to a specific goal location, animating character while moving, sleeping, animation, translation and introduction to waypoints, Unity's waypoint system, Introduction to Unity's vehicle system and customizing care behaviors, graph theory and pathfinding, Implementing pathfinding-using waypoints, navmeshes, Implement a player follow system using navmeshes and set up off mesh links, crowd simulation and create a crowded city, line of sight and finite state machines, Convert finite state machines to work on a nav mesh, Behavior trees and nodes, Goal Oriented Action Planning.

CSL243 Game Design and Asset Creation

(2-0-4) 4 Credits

This is course students will learn to create 2D and 3D assets essentials for game development with introduction of the skills required to create 3D Models in Industry Standard 3D Software efficiently. Students will learn different methods of modelling and texturing, and how to achieve good topology in a 3D model. Students will have the ability to develop, discuss, and implement from preproduction, to production, Assets for video game Industry. Students will have the skills to model, articulate, and render game requirement. Students will learn professional terms relating to real-time game asset creation. Produce professional game model renderings and breakdowns for use in a portfolio. Be familiar with time management as per professional asset development pipelines. This module will also give a theoretical and conceptual understanding of the field of game design, along with practical exposure to the process of creating a game and understand what defines a "game" and the mechanics and rules behind different types of games. Topics covered include iteration, rapid prototyping, mechanics, dynamics, flow theory, the nature of fun, game balance, and user interface design. Primary focus is on non-digital games. By end of the module, students will be creating a physical board game as their final project.

CSL244 Advance Programming for games**(2-0-4) 4 Credits**

This Module introduces students to more advanced concepts in game design and development such as concept ideation, digital prototyping, Develop Games (3D), interface design, usability testing, communication, project scoping and management.

Student will learn advanced game programming techniques, utilize industry-standard technologies, and apply your programming skills to animation, artificial intelligence and multiplayer systems. student will independently identify, choose, and implement appropriate algorithmic, programming, and mathematical techniques to develop software components for various aspects of computer games, such as character control, scene management, artificial intelligence, graphics and animation. Create prototype games or game fragments by integrating original software components with existing professional tools, such as game engines, middleware, and common application programming interfaces also Test, debug, and optimize a game or game component to meet production requirements.

CSL245 Programming for Games**(2-0-4) 4 Credits**

This is an introductory course for students will learn how to programme by creating your very own games using Unity3D, an industry-standard programme used by many large gaming studios and indie developers across the world and Master basic game development (produce, test and present a beta version of a game of your own design). Understand game design and apply the concepts for game development. Students will also learn most common languages for game designers to learn are C++ and C# for unity will be able to operate and write Unity based C# programme with Production Work Flow - 3Ds Max to Unity. By the end of the module, students will create a 2D platformer game.

CSL246 Cross Platform Game Development**(2-0-4) 4 Credits**

In this course, students will learn the best practices and techniques, to build, publish, and maintain your games. Here students will take their game development skills to the next level by deploying your games to different cross platform like - Android, iOS, Xbox and PS4. It is necessary for games to be developed for use across multiple platforms that operate on various networks and operating systems. This course provides practical and relevant skills to allow graduates to be proficient in cross-platform game development aspects such as their tools and programming languages. Graduates will have

a deeper understanding of best practices and methods to develop games for a wider set of users. Students will master with a game that can be instantly published and played on multiple platforms.

CSL247 Introduction to blockchain technologies**(2-0-4) 4 Credits**

Blockchain technology enables peer-to-peer transfer of digital assets without any intermediaries. This course deals with the fundamentals of blockchain and the cryptographic concepts underlying the technology. In this course, students will acquire knowledge about what the blockchain technology is and how it works at a high level. Starting from the origin of Blockchain, its objectives and challenges to bitcoin data structure. The course will provide an exposure about how the blockchain technology is related to various other technologies and concepts like communication, consensus and architecture etc. It will also provide the students with a better understanding of the kind of problems best suited for blockchain-based solutions and evaluate the risk associated with the technology.

CSL253 Web Frameworks**(2-0-4) 4 Credits**

Angular Introduction, Single Page Application, Angular-cli, Binding, Directives, Controllers, Services, DOM, Templates, Angular application architecture overview, Model View-View Model (MVVM), Typescript Introduction: Benefits, Environment Setup, Examples, Data Types and Variables: Basics, Arrays, Tuples, Enum and Void, Type inference, Type Casting, Destructuring and Spread: Array destructuring, Objects destructuring, Mixed destructuring, Property renaming, Default values, Interfaces: Declaration and Initialization, Duck Typing, Excess Property check, Indexable Types, Extending Interfaces, Classes: Writing and Using classes, Constructor method, Inheritance, Type casting, Type assertion, Static Properties, Abstract Class, Modules, Functions, Events, Generics: Functions, Types, Interfaces, Classes, App structure understanding, how angular app executes (Flow of execution), Creating a new project, Project setting - bootstrapping, Building and Serving, Component based architecture, Angular Building blocks. Create first component using CLI, Selectors, Decorators, Directives, Model, Property and event binding, Life Cycle Hooks, Role of App Module and Component declaration, Registering Components, using multiple components and passing data, Understanding component selector, Create first service using angular CLI, inject service into a component, creating a Data Service, Understanding a Hierarchical injector, Instances of a Service, Injecting Services into Services, Using Services for cross component communication, How to

make rest API call - HTTP Request and Response, Using REST data source, Making Cross Origin requests, Handling Errors. Routing Configuration, Routing Component, Adding Navigation links, Route parameters, navigating within a component, creating child routes, Guarding Routes, Loading feature modules dynamically, Targeting named outlets, Introduction to Express Framework, Introduction to Nodejs , What is Nodejs, Getting Started with Express, and first Express App using JSON, Express Routing, and Implementing MVC in Express, Middleware, Using Template Engines, Error Handling, API Handling, Debugging, Developing Template Engines, Using Process Managers, and Security & deployment.

CSL263 Advanced Excel

(2-0-2) 3 credits

This course will help students to enhance their employability skills and would get an edge in the career scoping in industry. Timely learning and hands on practice would benefit in various career fields. As data analytics/analysis is required in most of the profiles in the industry placements, this course would help in building good base and sound knowledge of the technical skills requirements.

CSL273 Enterprise Web Applications

(2-0-4) 4 Credits

Collections Framework: An overview, Benefits of using different collections classes, ArrayList: Introduction, Syntax, Usage examples, Sorting & Comparison, LinkedList: Introducing LinkedList class, Inserting and Deleting a new node, Iterator Interface, Sets: Introduction to Set Interface, HashSet and TreeSet, Examples and Usages, Maps: Introduction, HashMap and TreeMap, Examples and Usages, Stack: Introduction, Example and Usages, Queues: Introduction, Example and Usages, Priority Queue, Comparable & Comparators, Applications, Pros and Cons Generics Introduction: Why Generics, Examples and syntax, Generic Class: Declaration and Example, Generic Methods: Declaration and Example, Generic Interfaces: Declaration and Example, Comparing Generics Objects, Inheritance Rules for Generics, Bounded Type Parameters: What it is?, Example Pseudocode, Wildcard Arguments: Definition and usage Examples, Generic Constructors, Generic Interfaces, Generic Limitations, Multi-Threading Fundamentals: Introduction and Example Usages, Thread States and Transitions, Creating Threads - Using Thread class, Using Runnable Interfaces, Starting a Thread, Joining Threads: using Join Method, Thread Priorities: Example Demonstration, Synchronization: Concept and Example, Inter-Thread Communication: wait(), notify() and notifyAll(), Introduction to JDBC: Components, Architecture, JDBC API, Establishing a

connection, JDBC Demo (Connection with a relational database), Drivers, Statements, PreparedStatement, Exploring ResultSet, BLOBs, CLOBs, Metadata, Transaction Management, Exceptions in JDBC, Java EE, Different types of JEE Architecture, Introduction to MVC Architecture, Introduction to Apache Maven, Setting up Maven, Maven Repository - Local, Central, Remote Archetypes and pom.xml, Project Dependencies, External Dependencies, Snapshot dependencies, Plugins with the Maven Compiler Plugin, Creating a Maven Project in Eclipse, Maven Build Lifecycle, Phases, and Goals, Mvn commands

Introduction to Servlet API, Structure of web application, Request and Response Model: Get Vs Post, Servlet Container: How the container handles a request, Servlet Lifecycle, Environment Setup: Tomcat Installation, Deploying Web Applications: Working Example, Session Tracking/Management: Cookies, Hidden Form Fields, URL Rewriting, Http Session Interface, Session tracking in Servlets, Introduction to JSP, JSP lifecycle: Example, JSP Scripting Elements, Implicit Objects, Action Elements, Using Expression Language, JSP declarations, Developing JSP applications, Tags in JSP, Working with JSTL tags, Custom Tags in JSP, Handling JSP Errors, JSP Session Management, Software Testing Introduction, Why Unit Testing is important, Introduction to Junit, Overview of Junit: Installation Steps, Junit 5 Architecture, Environment setup, Creating Test Cases, Introduction to Mockito Framework, Overview of Mockito and mock objects, Using Mockito API, Adding Mockito to a project, Throwing Exceptions, Logging: What is logging, Introduction to SL4J, Environment Setup, When and how to use SL4J, Parameterized Logging, SL4J Profiler.

CSL274 Middleware Frameworks and ORM

(2-0-4) 4 Credits

What is Spring, Brief History of Spring, Why Spring, Before Spring (Loosely Typed Application Example), Basic Spring Example, what is IOC and DI, Spring vs J2EE, Understanding Spring Framework in Detail, Understanding Various Factories in Spring. Spring Setup with JARS only, Spring Setup with Maven, What is Maven, Why we need it, About POM, About Dependency, About Goals, About Plugins, Spring XML Based Approach, Constructor, Injection, Setter Injection, Object Injection, Collection Injection, Bean Inheritance, Bean Life Cycle, Scopes: Singleton and Prototype, Application Context Aware, Code By Interface, Auto Wire and Its Types, Using Property File, Spring Annotation Based Approach, Stereotype, Auto Wire and it types and Qualifiers, Default Bean Name, Qualifiers with Constructors, Using Property file, Constructor Injection, Setter Injection, Object Injection, Collection Injection, Bean Inheritance, Bean Life Cycle, Scopes: Singleton and Prototype, Spring Java Config Approach:

@Bean, @Configurable, @Primary, Using Property file: Constructor Injection, Setter Injection, Object Injection, Collection Injection, Bean Inheritance, Bean Life Cycle, Scopes, Singleton and Prototype, Overview, Advice Types, Pointcuts, Ordering Aspects, Join Point, Overview, MVC Flow Understand, Setup Spring in Maven, Hello World in Spring, Request Params, Path Params Login / Register / Profile View and edit, Using JSTL, Page Redirect, Session Handling, Validations (Predefine and Custom), I18N, Error Handling, Spring integration with JDBC, Spring integration with Logger, Spring Integration with Mail, Spring integration with JPA, ORM Basics, Hibernate vs JDBC, Setup with Maven

CSL276 NoSQL Databases

(2-0-4) 4 Credits

What is NoSQL, Why NoSQL, List of NoSQL databases, Characteristics of NoSQL, Storage Types in NoSQL (Column oriented, Document store, Key-value store, Graph store, Multi storage type databases, Advantages and drawbacks of NoSQL databases, Introduction to Mongo DB, Installation and Setup, Basic Data Types, Using MongoDB shell, running a script in MongoDB, Data Modelling and Architecture, Advantages of MongoDB - Why & Where to use, Introduction to Mongo DB, Installation and Setup, Basic Data Types, Using MongoDB shell, running a script in MongoDB, Data Modelling and Architecture, Advantages of MongoDB - Why & Where to use, General concepts of Aggregation & Sharding, Pipeline Operations(\$match, \$project, \$group, \$unwind, \$sort, \$limit, \$skip), Map reduce and Aggregation commands, Introduction to sharding, Configuring sharding (When and How), Text search Features in MongoDB, Text Index, Text operator, Extract phrase, Term Exclusion and sorting, Full text search and partial search, MongoDB NodeJS drivers and other dependencies, Use MongoDB client to make a connection with MongoDB, MongoDB and Collections, CRUD operation(create, read, update, delete using MongoDB), What is graph, Data Relationships, Relational Vs. Graph Data Modeling, Graph Theory & Predictive Modeling, Basics of Graph Search Algorithm.

CSL281 Secure Communication and Cryptography

(2-0-4) 4 Credits

This course deals with the underlying principles of cryptography, an indispensable tool for protecting information in computer system. In this course, students will acquire knowledge on standard algorithms used to provide confidentiality, integrity, and authenticity. Starting from the classical ciphers to modern day ciphers, the course provides exposure regarding construction and cryptanalysis of symmetric key ciphers. It also covers stream cipher, public key ciphers, key

exchange algorithm, one way functions, Message Authentication Codes (MAC) and signature schemes. Finally, it concludes with the design rationale of network protocols for key exchange.

CSL284 Digital Forensics and Malware Analysis

(2-0-4) 4 Credits

Digital forensics course plays very crucial role in investigating computer related crime. In this course, the different methods for the identification, investigation and analysis of digital evidences are examined. The course aims to present these concepts in a general setting that is not tied to one particular operating system. During this course, students will learn about core forensics procedures to ensure court admissibility of evidence. This course also includes the different methods for the identification, investigation and analysis of malicious code using various network and system-monitoring tools to examine and assess how malware interacts with the file system, registry, network and other processes in order to detect, analyze, understand, control, and eradicate malware. Further, the students will be able to utilize memory forensic techniques to examine, predict and compare capabilities of malware. It blends theoretical concepts with lots of real life examples and case studies to ensure practical exposure and through understanding all the digital forensics artifacts.

CSL303 Operating System

(3-0-2) 4 Credits

Introduction to Operating System-Evolution of OS, Design goals, System Calls, OS Services Process – scheduling, Process State Diagram, Scheduling Algorithms, Threads, Process Synchronization, Software Solutions, Hardware Solutions, OS Type Solutions. Deadlocks Handling, Characterization, Prevention, Avoidance & Prevention, Memory Management, Paging, Segmentation, Virtual Memory, File & Device Management, File Systems, Disk Management, Case Studies - Microsoft family of OSs, Linux OS.

CSL311 Big Data

(2-0-4) 4 Credits

Introduction to Big Data: Characteristics of big data, Big Data and its importance, Challenges of big data, Big data applications, Apache Hadoop and Hadoop Eco System-Storage, Hadoop Architecture, HDFS, Common Hadoop Shell commands, Anatomy of File Write and Read Name Node, Secondary Name Node and Data Node, Hadoop Technologies – Cassandra, Map Reduce – Processing Big Data, Understanding Inputs and Outputs of Map Reduce, Elastic Map Reduce on Cloud, Hadoop

Map Reduce paradigm Map and Reduce tasks, Cluster Setup ,Spark : Getting Started with Spark, Setting up Python with Spark, RDD, Functional Programming, Local Virtual Box Set-up, Amazon Web Service (AWS) EC2 PySpark Set-up, Databricks Setup (Optional), AWS EMR Cluster Setup, Running Spark on a Cluster, SparkSQL, Spark DataFrame Basics, Spark Graph X, Collaborative Filtering for Recommender Systems, Natural Language Processing in Spark, Real-time analytics with Spark Streaming, Big Data Analytics Hive : Hive Shell, Hive Services, Hive Metastore, Comparison with Traditional Databases, HiveQL, Tables, Querying Data and User Defined Functions. Machine learning with big data, Spark MLlib(Machine Learning Libraries - Classification and Clustering Algorithms).

CSL312 Deep Learning

(2-0-4) 4 Credits

Introduction to Deep Learning Introduction to ANN, Building an ANN, Evaluating, Improving and Tuning the ANN, Restricted Boltzmann Machine ,CNN Introduction-Building a CNN, Evaluating, Improving and Tuning the CNN RNN Introduction - Building a RNN Evaluating, Improving and Tuning the RNN,LSTM, Boltzmann Machine Intuition, Building a Boltzmann Machine, Auto Encoders Fundamentals Building an Auto Encoder, Types of Encoder, Deep Learning NLP Chat bots: Introduction to NLP (Natural Language Processing), Deep NLP Introduction, Building a ChatBot with Deep NLP.

CSL313 Machine Learning

(2-0-4) 4 Credits

Data Pre-processing and Vector Normalization for ML Clustering Algorithms, K Means, Hierarchical, Association Rule Learning, Apriori, Eclat, Reinforcement Learning, Upper Confidence Bound UCB, Thompson Sampling, Unsupervised Learning Hierarchical, DBSCAN, Fuzzy C-Means, Dimensionality Reduction, Principal Component Analysis PCA, Linear Discriminant Analysis LDA, Kernel PCA, Model Selection , Model Selection, XGBoost , Feature Selection- Filter and Wrapper, Introduction to Self Organizing Maps, Building a Self Organizing Map.

CSL315 Advanced Java

(3-0-2) 4 Credits

This course is on Advanced Java with engineering tools. The course is designed as an advanced course of java programming and assumes that students already have strong programming skills on Java SE (Standard

Edition). This intensive, hands-on course explores Java EE (Enterprise Edition) language features and packages by going deeper into programming topics that help understand concepts including the MVC Architecture, JDBC, Java Servlets, Java Server Pages and Unit Testing using Mockito & JUnit. By the end of this course the students will have sound knowledge of advanced java concepts and will be able to apply them for designing and developing java based interactive web applications.

CSL316 Introduction to Image Processing and Recognition

(2-0-4) 4 Credits

Elements of digital image processing, Image model, Sampling and quantization, Relationships between pixels, Image Transforms, Discrete Fourier Transform, Discrete Cosine Transform, Haar Transform, Hadamard Transform, Image Enhancement, Enhancement by point processing, Spatial filtering, Enhancement in the frequency domain, Color Image Processing, Image Segmentation, Discontinuity detection, Edge linking and boundary detection, Thresholding, Region oriented segmentation, Use of motion for segmentation Introduction to CV, Introduction to Face Detection, Face Detection with OpenCV, Object Detection Introduction, Object Detection with SSD, Generative Adversarial Networks (GANs) Introduction.

CSL318 Theory of Computation

(3-0-2) 4 Credits

Regular Languages, Finite Automata, equivalence, minimization, Myhill-Nerode Theorem, introduction to nondeterminism, Context free grammars, Pushdown automata, equivalence and applications. Turing machines, Recursive and Recursively enumerable sets, non-determinism, RAMs and equivalence, Universal Turing Machines, undecidability, Rice's theorems for RE sets, Post machines, Basics of Recursive function theory. Equivalence, Church's thesis, computational complexity

CSL337 Cloud Architecture

(2-0-4) 4 Credits

Cloud Service Models, Cloud Ecosystem, Cloud Delivery Models, Public Cloud Platforms - AWS, Microsoft Azure,

Google App Engine. Algorithms and Programming Patterns for Cloud Applications - Task, Data and Pipeline Parallelism, Map- Reduce and Hadoop, Graph Analytics and Graph.

CSL338 Virtualization & Cloud Computing

(2-0-4) 4 Credits

Virtualization and Virtual Machines, Implementation levels of Virtualization, VMM Design Requirements, Middleware Support for Virtualization, Virtualization Mechanism and Tools, Virtualization of CPU, Memory and I/O devices, Virtual Clusters and Resource Management, Virtualized Data Centers

CSL339 Big Data on Cloud

(2-0-4) 4 Credits

Introducing Big Data and Hadoop, what is Big Data and where does Hadoop fit in, two important Hadoop ecosystem components, namely, MapReduce and HDFS, in-depth Hadoop Distributed File System - Replications, Block Size, Secondary Name node, High Availability and in-depth YARN - resource manager and node manager. Distributed database architecture. No Sql databases with RDD. Data Frames and Spark SQL: The detailed Spark SQL, the significance of SQL in Spark for working with structured data processing, Spark SQL JSON support, working with XML data and parquet files, creating Hive Context, writing Data Frame to Hive, how to read a JDBC file, significance of a Spark Data Frame, how to create a Data Frame, what is schema manual inferring, how to work with CSV files, JDBC table reading, data conversion from Data Frame to JDBC, Spark SQL user-defined functions, shared variable and accumulators, how to query and transform data in Data Frames, how Data Frame provides the benefits of both Spark RDD and Spark SQL and deploying Hive on Spark as the execution engine. Integrating Apache Flume and Apache Kafka: Why Kafka, what is Kafka, Kafka architecture, Kafka workflow, configuring Kafka cluster, basic operations, Kafka monitoring tools, integrating Apache Flume and Apache Kafka, Fundamentals of Hadoop, YARN& EMR cluster. Apache Sqoop introduction, Introducing Hadoop Hive, detailed architecture of Hive, comparing Hive with Pig and RDBMS, Comprehensive knowledge of HDFS, MapReduce, Hive, Pig, Oozie, Sqoop, Flume, ZooKeeper and HBase.

CSL341 Augmented Reality Development

(2-0-4) 4 Credits

Augmented reality [AR] is poised to revolutionize the way we understand the world by overlaying physical reality with real-time, interactive virtual content. AR will completely change the way users understand the world and their digital experience. AR will overlay the real world with games, adds, knowledge and much more. This course covers the concepts of Augmented Reality, equips graduates with the practical skills to develop

games/applications using this emerging technology, and will break down complex AR concepts to make them easy to understand. Students will start with the fundamentals of augmented reality (AR), and how to build an AR experience using ARCore. Will also learn how to develop their own mobile AR applications in Unity for iOS and Android devices and about the features offered by Unity's AR Foundation, and about additional features in ARKit and ARCore. Using the very latest techniques recommended by Unity, Students would build a complete AR environment that you can continue to use after the course, while learning to apply best practices in user experience and interaction.

CSL343 Designing Human Computer Interfaces

(2-0-4) 4 credits

Visual Display Unit, Development of the Sketchpad, Douglas Engelbart introduction to programming toolkits, Introduction of Word Processor, Introduction of personal computer, Difference between HCI and UX design, Human psychology, Emotional design, Specialized design processes. HCI, history of HCI, discuss important aspects of interaction design. Concept of Usability Engineering: method, progress, software, and systems. Concepts: User-Centered Design, Usability Testing. User Centre Design (UDC), Graphic User Interface (GUI) Design &Aesthetics. Creating prototype of HCI.

CSL345 Virtual Reality Development

(2-0-4) 4 Credits

Technology is rapidly changing and evolving, with virtual reality (VR) being one of the most popular tech trends today. This course covers the concepts of VR and equips graduates with the practical skills to develop games/applications using this emerging technology. With this new knowledge, graduates will be able to analyse, design, plan, and create game/applications that leverage VR technologies along with VR students will also cultivate the skills to design, programme and develop Interactive experiences using Mixed Reality software and hardware. Students will learn the fundamental concepts and applications of mixed reality using a modern game engine and hardware platform. Students will also learn to appreciate the unique design opportunities inherent to the platform. To supplement and simulate the physical world, students will learn methods and practices to meaningfully integrate virtual content into physical world.

CSL346 Artificial Intelligence & Machine Learning on Cloud

(2-0-4) 4 Credits

Introduction Cloud Computing. Introduction to Machine Learning, Types of Learning: Supervised, Unsupervised, Reinforcement. Learning System: Well posed learning problem, Designing a learning system, Issues in machine learning. How cloud is related to ML, Amazon Web Services Cloud Platform: AWS Management Console, AWS Command Line Interface, Software Development Kits. Analytics: Athena, Amazon EMR, Amazon CloudSearch, Amazon Elasticsearch Service, Amazon Kinesis, AWS Cost Management, Business Application, Compute services, EC2 Auto-Scaling, Container Registry, VMware Cloud on AWS, Databases: Aurora, RDS, DynamoDB etc. Security Identity and Compliance: Identity and access Management, Security Hub, GuardDuty, Inspector, AWS Single Sign-On (SSO), AWS Shield, AWS Organizations, AWS Key Management Service, Firewall Manager, Storage: AWS Storage Gateway, Amazon S3, Amazon Elastic Block Store, Amazon S3 Glacier, Amazon FSx for Windows File Server, Amazon FSx for Lustr, Amazon Elastic File System, Introduction to AWS Machine Learning Services. Machine Learning for business challenges, Exploring Machine learning Toolset, Maths for machine Learning, Managing ML Projects, Power ML at scale, ML security, Developing Machine Learning Applications: Introduction to Amazon SageMaker, Introduction to Amazon SageMaker Neo, ML Algorithm, Automatic Model Tuning in Amazon SageMaker, Advanced Analytics with Amazon SageMaker, Anomaly Detection on AWS, Building Recommendation Systems with MXNet and GluOn, Deep learning Landscape, Deep Learning process for build, train and deploy, challenges with deep learning Projects.

CSL347 Applied Artificial Intelligence and Expert Systems

(2-0-4) 4 Credits

History of Artificial Intelligence, state-space, heuristic, depth-first, hill climbing, A, A*, AO*, stochastic, evolutionary search algorithms, Divide and Conquer, Greedy, Branch and Bound, Gradient Descent, minimax and alpha-beta search, Ontologies, representing and reasoning about objects, relations, events, actions, time, and space; predicate logic, situation calculus, description logic, standard logic, uncertainty, probability, probabilistic reasoning, probabilistic inference, baye's theorem, Bayesian reasoning, bayesian network, fuzzy sets, Semantic web, semantic networks, Architecture, Generation of expert system, Strip, K-strip, meta knowledge, domain expert, knowledge engineer, heuristics, expert system shells, Typical expert system such as MYCIN and DART.

CSL348 Reinforcement Learning

(2-0-4) 4 Credits

Overview of reinforcement learning: the agent environment framework, successes of reinforcement learning, Bandit problems and online learning, Prediction and Control by Dynamic Programming, Markov property, Markov chains, Markov reward process (MRP), Markov decision process (MDP), state and action value functions, Bellman expectation equations, optimality of value functions and policies, Bellman optimality equations. Incremental Monte Carlo Methods for Model Free Prediction, Q-Learning and their variants. Function Approximation Methods, gradient descent, Gradient MC and Semi-gradient TD(0) algorithms, Control with function approximation, Least squares, Experience replay in deep Q-Networks, Policy Gradients, Case studies

CSL349 Artificial Intelligence for Robotics

(2-0-4) 4 Credits

Introduction to Robotics: Progressive advancements, components, Degree of Freedom, Joints, Coordinates, Programming Modes, Robot characteristics, Robot Languages, Applications. Actuators, Sensors, signal conditioning, Kinematics of robots - Position analysis: Robot as Mechanism, Conventions, Matrix representation, Homogeneous Transformation, Representation of transformation, Inverse of Transformation, differential motions, Forward and Inverse Kinematic of Robots, Dynamic analysis of robot, Static force analysis of Robots. Robot Control System - Open and closed loop control, Linear control schemes. Partitioned PD control Schemes, PID control schemes, Force control of Robotics Manipulators tasks, Force control strategy. On-line and off-line programming, AI in Robotics, Applications in unmanned systems, defense, medical, industries, Machine Vision system.

CSL355 Bitcoin and Cryptocurrency Technologies

(2-0-4) 4 Credits

Bitcoin is a digital payment currency that utilizes cryptocurrency, a digital medium of exchange and peer-to-peer (P2P) technology to create and manage monetary transactions as opposed to a central authority. The course includes the technical aspects of engineering secure software, system interactions with crypto-currencies, and distributed consensus for reliability. This course introduces to the world of cryptocurrency and mining applications. It includes different management strategies and regulatory frameworks for cryptocurrencies and explains how different methods are used to mine cryptocurrency.

CSL356 Smart Contracts**(2-0-4) 4 Credits**

The course will provide an understanding of the concept of smart contracts and how to implement the business logic of a Smart Contract using business rules. The course will introduce the students to the concepts of Blockchain and its platforms like Bitcoin, Ethereum, Hyperledger and Multichain etc. It will discuss different reward schemes in blockchain technologies and how these can influence the development of smart contracts. It will provide an exposure about the critical role of smart contracts in transforming blockchain technology form enabling decentralised systems. In this course, students will be able to create decentralized apps that can harness the power of the blockchain for a wide variety of use cases.

CSL357 Blockchain for Cyber Security**(2-0-4) 4 Credits**

Blockchain plays a crucial role in transforming cybersecurity solutions. This course introduces common cyberthreat landscape and common attacks such as malware, phishing, insider threats, and DDoS. It explains how Ethereum and Hyperledger architecture fit into the cybersecurity ecosystem. This course deals with adaptation of security triad with Blockchain. In this course student will be able to build Blockchain-based apps for two factor authentication, DDoS protection and develop Blockchain-based Public Key Infrastructure solutions and apps for storing DNS entries. This course also gives exposure to identify and resolve security issues with smart contracts.

CSL358 Blockchain Technology in Web Development**(2-0-4) 4 Credits**

This course gives exposure to build an API server to interact with your blockchain and to host blockchain on a decentralized network. Course deals with decentralization and explain it is an important feature for securing a blockchain. In this course student will be able to build a consensus algorithm and use it to verify data and keep the entire blockchain network synchronized. Student will be able to build blockchain prototype and gain a thorough understanding of why blockchain technology is so secure and valuable.

CSL371 Mobile Application**(2-0-4) 4 Credits**

Introduction to flutter, Understanding flutter Architecture,

Dart Basics: Installation, First programme in Dart, Data types in Dart: Number, String, Boolean, List, Set, Map; Dart - Const and Final Keywords ; Control Flow Statements: if else, switch case, conditional operators, loop, Labelled loop, Break and Continue, Functions in Dart: Functions, Fat Arrow Functions, Optional Positional Parameters, Optional Named Parameters, Functional Programming, var args, Anonymous function, future and Async, Server call, Map & key -value pair, List, Set, Object Oriented Programming in Dart: Class and Object, named constructor, Setters & getters , Is -A , Abstract Class, Interface, import, Down casting; Exception handling, Flutter Versions, Flutter architecture, Flutter Future, Flutter MAC and window Setup (Installation of Android Studio), Material Design in Flutter, Building and Understanding First Project , Running the First Project (Android Emulator and IOS Emulator), Widget basics , Types of Widgets, Hello World App with Variable value, Writing Scaffold , AppBar, Adding Row and Column Layout and its Properties, Button Event Binding with function and anonymous function, Stateless v/s Stateful widget, Writing EMI App (TextField, Controller, CallBack) Connect Mobile and Test on Mobile, Debugging: Break Points and Logs, Dart Dev Tools. Core Flutter widgets: Scrollable Row and Column, Button and types, ListView, ListTile, Future, Builder , Http Call , Life Cycle GridView, GridTile, AppBar Buttons ,Floating Action Buttons, Modal Bottom Sheet, Themes and Text Styling, Custom Fonts, SizedBox, Routing, Tabs, Drawers, Filters, State management using provider, Connect with FireBase, Login with Gmail, Camera, GPS Access.

CSL373 DevOps**(2-0-4) 4 Credits**

Introduction to DevOps, Agile, Continuous Integration, Continuous Delivery and the Three Ways; Principles of Flow, Principles of Feedback and The Principles of Continual Learning and Experimentation, Continuous Deployment, DevOps Practices, Relationship between Agile and DevOps, Differences between DevOps and Traditional approach, Overview of DevOps tools, Categories of DevOps tools, CI/CD Pipeline, Operational Methodologies: ITIL, COBIT, System Methodologies: LEAN, Maven Introduction, Features of Maven in DevOps, Installation and working of Maven, Core concepts of Maven, Maven Repositories, Maven Architecture, Pros and Cons of Maven, Project Object Model, Build Life-Cycle, Build Profiles, Creating Project using Maven, Build and Test Project, Repositories and Plug-ins, Docker Overview, Benefits and Use of Docker, Installation and Configuration, Running the first container, Working with Containers, Docker Hub, Images: Docker Image Basics, Building our own image, Pushing images to Docker Hub, Docker Architecture, Docker Engine, Docker Networking Basics, Testing with Docker: Using Docker to test a Static Website, Kubernetes Basics, why use Kubernetes, Features and Architecture, Installation and Setup,

Images, Jobs, Labels and Selectors, Namespace, Node, Service, Pod, creating a Kubernetes Cluster, Deploy an app, Overview and Installation of Jenkins, Preparing Environment and Setting up Jenkins, creating a new job with Jenkins, Running Jenkins job, Configuring Tools and Jenkins Server, Configuration of build tools with Jenkins, Build Job, Testing.

CSL374 Micro service Based Application

(2-0-4) 4 Credits

Micro services, Value Proposition, Distributed architecture, Service oriented architecture,

Business oriented, Design for failure, Decentralized data management, Discoverability, Inter-service communication, REST API, Boundaries, API Design, Decomposing Monolithic applications, Independent Deployment, Docker and Micro services, Micro services Security, Micro services testing, Reference architecture, event driven architecture, Micro services and DevOps., Deployment and testing of web services.,

CSL382 Blockchain

(2-0-4) 4 Credits

This course introduces blockchain, a revolutionary technology that enables peer-to-peer transfer of digital assets without any intermediaries. It is designed to provide students with an understanding of key concepts and developments around cryptocurrencies and distributed ledger systems. It develops a basic understanding of blockchain technology while covering basic properties of bitcoin, the mechanics behind it (e.g. including cryptographic hash functions, Bitcoin Script, privacy, and hash commitment schemes). It also demonstrates some of the blockchain use cases in technology, business and enterprise products. Other aspects of course include building a blockchain network and cryptocurrency and challenges in adoption of blockchain technology.

CSL383 Network Security

(2-0-4) 4 Credits

This course delivers the technical knowledge, insight, and hands-on training students need to identify attacks on network with confidence. This course covers various aspects of network security including security issues in different layers of networks, intrusion detection, prevention and defense against cyber-attacks. Students will be guided through a series of laboratories and experiments in order to understand and analyze different attack/defend scenarios and determine the effectiveness of particular defense deployments against attacks.

CSL384 Cloud Security Essentials

(2-0-4) 4 Credits

This course takes you on a tour of cloud computing systems and its security challenges. During this course, students will develop the necessary skills to identify possible security issues in the cloud environment. This course starts with basics of cloud, cloud security concepts covering encryption and presence of suspect in cloud, cloud security architecture and consequently discuss different ways to secure a cloud. In this course, students will be able to: Understand important concepts of cloud computing such as types of cloud computing, deployment model, virtualization, etc. Design, implement and manage complete cloud computing systems. Identify security issues in cloud computing and different ways to store data safely on cloud.

CSL385 Risk Analysis & Assessment

(2-0-4) 4 Credits

The goal of this course is to introduce a suite of risk analysis and assessment techniques to the students. It will assist students to develop an understanding of the fundamentals of risk management and to introduce classical as well as state-of-the-art risk analysis techniques. In this course, student will learn about risk management process, cyber risk exposures, cyber insurance, regulatory environment and how cyber risk management applies to the enterprise. Further, it covers risk assessment, mitigation and treatment of critical risk communication. At the end of this course, student will be able to identify information security related threats, vulnerability; Determine the risk level, define controls and safeguards and utilize a range of popular risk analysis techniques innovatively to examine risk problems

CSL387 Web and Mobile Security

(2-0-4) 4 Credits

This course offers you the knowledge and skills to build better and more secure web and mobile applications. It starts with importance of web security, working of web, strengths and weakness of web, factors that makes web vulnerable, and illustrates fundamental countermeasures that every web application should implement. Throughout the course, you will gain insights into the threats that modern web applications face and their countermeasures; not only in theory, but also in practice. Later on, this course focuses on various mobile threats and exploits. Particularly, this course emphasize on android applications as these applications are the biggest surface of attacks.

CSL422 Cyber Security

(3-0-2) 4 Credits

Data, Information, Security Triangle, key terms, Types of Information, Cyber Terrorism, Defacement, Cyber laws, Network Terminologies, Introduction to Malwares, Information gathering, Web VAPT, Network VAPT, IMSM, Information gathering Domain Name Services, targeting email and Maltego, digital footprinting, Nmap and Port Scanning, Vulnerability Scanner, OS Fingerprinting, Banner Grabbing, Enumeration Tools, Vulnerabilities and levels of vulnerabilities, Penetration testing OS, Wordlist generator, Crunch tool, Direct Exploitation, Password Attacks-Online Offline, Exploitation-Client-side Attack, Social Engineering exploitation, OS login bypass, online, offline method, Keyloggers (Ardamax), Malwares, Trojan, Dark comet, Remote Connections, Post exploitation, Power-hub tool File Transfer Without interactive Shell, Exploit Development, Pivoting, setting up domain controller.

CSL445 Cloud Application Development & Deployment

(2-0-4) 4 Credits

Technical architecture considerations - concurrency, speed, and unpredictable loads. Agile development, team composition (including roles/responsibilities), working with changing requirements and aggressive schedules. Understanding Model View Controller (MVC); Advanced understanding of "views", location, and the presentation layer: Advanced Ajax and JQuery. Presenting to different browsers and devices. Localization and internationalization; Understanding client location and device type. Mobile application development - Android, iOS, WP, RIM, Symbian. Session management. Advanced database techniques using MySQL and SQL Server, blob storage, table storage; Working with Third Party APIs: Overview of interconnectivity in cloud ecosystems. Working with Twitter API, Flickr API, Google Maps API. Advanced use of JSON and REST. containers and kubernetes. Virtual machines, containers, and Kubernetes. Relationship between Kubernetes and containers: Kubernetes orchestration, How Kubernetes was created, Kubernetes architecture, Kubernetes resource model, Key resources and pods, Kubernetes application deployment workflow.

CSL446 Cloud Security

(2-0-4) 4 credits

Roots of Cloud Computing, Layers and Types of Clouds, Desired Features of a Cloud, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks. Security Architecture, Cloud Computing Architecture,

Control over Security in Cloud Model, Security Concerns, Accessing Risk Tolerance in Cloud Computing, Legal and Regulatory Issues. Introduction to AWS Machine Learning Services. Machine Learning for business challenges, Exploring Machine learning Toolset, Math for machine Learning Security requirements for the Architecture, Security Patterns and Architectural Elements, Cloud Security Architecture, Planning Key strategies for secure operations, Overview of Data Security in Cloud Computing, Data Encryption, Cloud Data Storage, and Cloud Lock-in. Overview and Limits of Security Controls, Security Monitoring, Building an Internal Cloud, Selecting an External Cloud, Evaluating Cloud Security, operating a Cloud and Using Mobile Cloud. Federation level in the Cloud, How Encrypted Federation Differs from Trusted Federation, Federated Services and Applications, Protecting and Controlling Federated Communication, Privacy and Its Relation to Cloud-Based, Information Systems: Privacy Risks and the Cloud, Protecting Privacy Information, Fully and Partial Encryption, Homomorphic Encryption, Cloud Security and comprehensive.

CSL447 Computer Vision

2-0-4) 4 Credits

Introduction and Image Sensing, Image Analysis pixels, Image Transforms, Discrete Fourier Transform, Discrete Cosine Transform, Haar Transform, Hadamard Transform, Image Enhancement, Enhancement by point processing, Spatial filtering, Enhancement in the frequency domain, Color Image Processing, Image Segmentation, Morphological Filtering Discontinuity detection, Edge linking and boundary detection, Thresholding, Region oriented segmentation, Use of motion for segmentation, Affine Reconstruction Feature Extraction and Analysis, Pattern Classification Introduction to CV, Introduction to Face Detection, Face Detection with OpenCV, Object Detection Introduction, Object Detection with SSD, Generative Adversarial Networks (GANs) Introduction.

CSL448 Computational Linguistics and Natural Language

(2-0-4) 4 Credits

Computers in Linguistics and Natural Language Processing, Syntax, Semantics, and Pragmatics, Applications of NLP, The role of machine learning, Brief history of the field, The nature and use of text corpora, Pattern matching using Regular Expressions, Corpus Search and Counting, Regular languages: N-grams, The role of language models, Simple N-gram models, Estimating parameters and smoothing, evaluating language models, Lexical syntax, Tokenization, Types of Tokenizers, Part-of-Speech Tagging, Stemming, Lemmatization, Stop-Word Removal. Grammar formalisms and treebanks, Context-free

languages, Syntactic ambiguity, Context-free grammars, Push-down automata, Chomsky Hierarchy, Efficient parsing for context-free grammars (CFGs), dependency parsing, Chunking, Chinking. Lexical semantics and Word-Sense Disambiguation, Compositional semantics, Semantic Role Labeling and Semantic Parsing, Named Entity Recognition and relation extraction, Co-reference resolution, Feature Engineering: Bag of Words, Count Vectorizer, TF-IDF, Building a simple ML model for NLP applications, Basic issues in Machine Translation, Statistical translation, word alignment, phrase-based translation, and synchronous grammars.

CSL449 Security and Privacy for Big Data Analytics

(2-0-4) 4 Credits

This course deals with the principles and mechanisms required to manage access controls in Big Data systems. In this course, students will gain knowledge about all security related issues in big data systems and projects. The students will learn the importance of data protection, understand the privacy risks arising from Big Data applications and methods which reduce or prevent privacy risks of data processing activities. The course will also cover system and network vulnerabilities, exploitation and defence mechanisms.

CSL501 Mathematical Foundations of Computer Science

(3-0-0) 3 Credits

Introduction, basic elements of Linear algebra, the matrix and the vector, Linear equations & Matrices, Special type of Matrices & Partition Matrices, Vectors in the Plane, Vector Spaces & Subspaces, Linear Independence, Basis & Dimension, The Rank of a matrix, The standard inner product on \mathbb{R}^3 , Inner product spaces, The Gram-Schmidt Process, The Kernel & Range of a Linear Transformation, The Matrix of a Linear transformation, The vector space of Matrices, Eigenvalues & Eigenvectors, Diagonalisation of symmetric matrices, Real Quadratic Forms, Complex Eigen values & Eigenvectors, Lines, Planes in \mathbb{R}^n , Hyperplanes: Definition, normal vector, normal equation for the hyperplane, decision boundary, Hyper surface, Affine hyper planes, Optimum Separation Hyper plane, Non-linear Classification and the Kernel trick.

CSL502 Advanced Algorithms

(3-0-2) 4 Credits

Introduction to general Algorithm Paradigms: Divide and Conquer, Dynamic Programming, Greedy Method and Backtracking; Algorithm analysis, RAM Model,

Recurrence relation, Master theorem, Asymptotic vs. Amortized analysis. Breadth First Search and Application, Depth First Search and Application, Euler Tour, Heaps and Application, Divide and Conquer- Recursive Procedures, Binary Search, Integer Multiplication, Advance Sorting. Backtracking (Recursion/DFS), Branch & Bound (Expansion/BFS), Dynamic Programming: General method, Optimization problems, All Pair Shortest Path, Genetic Algorithms, Genetic Algorithmic operators & Process, Solving TSP using GA, Solving 0/1-knapsack using GA. String-Matching problem - String-matching algorithms: Finite Automata for string matching, Rabin-Karp, Knuth-Morris-Pratt algorithm, Boyer-Moore algorithm, Applications: (virus detection/plagiarism, DNA pattern matching (LCS) in Bioinformatics. NP-Hard problems, Reductions, Approximation algorithm, Performance Ratio, Bin Packing Problem, Approx -Travelling Sales Person - Tour.

CSL515 Soft Computing

(3-0-2) 4 Credits

Fuzzy Sets, Operations on Fuzzy Sets, Fuzzy

Logic Systems: Basics of Fuzzy Logic Theory, Crisp and Fuzzy Sets, Basic Set Operations, Fuzzy Relations, properties of membership functions, Composition of Fuzzy Relations, Fuzzy Inference, Zadeh's Compositional Rule of Inference, Defuzzification, Mathematical Similarities between Neural Networks and Fuzzy Logic Models, Fuzzy Additive Models. Evolutionary Algorithms: Difficulties with Classical Optimization Algorithms, Genetic Algorithms, Evolution. Strategies, Evolutionary Programming, Genetic Programming, Multi-Modal Function Optimization, Crowding Model, Sharing Function Model. Fuzzy classification and Pattern recognition Algorithm. Learning and Soft Computing: Examples of Applications in Diverse Fields, Basic Tools of Soft Computing, Basic Mathematics of Soft Computing, Learning and Statistical Approaches to Regression and Classification.

CSL530 Statistics with Python

(2-0-4) 4 Credits

Introduction to Statistics, Types of Data (Quantitative, Qualitative, Logical), Level of measurement of data), Fundamentals of Descriptive Statistics (moments-Measures of Central Tendency, Measure of spread, Measure of Shape), Data Visualization. Python installation, Learning Jupyter notebook and Spyder. Variable types, mathematical and logical operator, conditional statement...if... Else, For loop while loop Data structure in python:List, tuple, array, set, dictionary, operations on Inbuilt methods. Descriptive statistics and Visualization Data Frequency, Mean, median, Range,

Quartile max, min, correlation, percentile Exploring the data, Summarizing the Data, handling missing value, visualizing the data and interpret summaries for univariate and multi variate data Scatter plot, Stem and Leaf plot, Line plot, Bar and pie plot, Histogram, Box plot, Heat map. Inferential Statistical Analysis in python ANOVA, Correlation and regression, Construction of confidence interval, Parametric Test, Non-parametric test. Fitting Statistical model to data with Python and evaluation of the model 10 Linear Regression, Logistic Regression.

CSL535 Advanced Data Structures

(3-0-2) 4 Credits

Introduction to Data Structures, Arrays, recursion, Stacks- Operation on Stack, Pointers and Stacks. Queues- Dynamic Implementation using pointers. Static Lists and Linked Lists- Insertion, deletion, Sorting, Singly Linked List, Doubly Linked List. Storage management- Memory Representation, boundary Tag Systems, Storage Allocation. Trees-Binary Tree, Complete Binary Tree, Binary Search Tree. Graphs- Traversal in Graphs, Spanning Trees, Sorting- Insertion, Selection, Bubble, Quick, Searching- Linear Search, Binary Search, Division Method, Mid Square Method.

CSL537 Risk Management Principles and Policies

(2-0-4) 4 Credits

The goal of this course is to introduce a suite of risk analysis and assessment techniques to the students. It will assist students to develop an understanding of the fundamentals of risk management and to introduce classical as well as state-of-the-art risk analysis techniques. In this course, student will learn about risk management process, cyber risk exposures, cyber insurance, regulatory environment and how cyber risk management applies to the enterprise. Further, it covers risk assessment, mitigation and treatment of critical risk communication. At the end of this course, student will be able to identify information security related threats, vulnerability; Determine the risk level, define controls and safeguards and utilize a range of popular risk analysis techniques innovatively to examine risk problems.

CSL544 Cyber Forensics and Malware Analysis Fundamentals

(2-0-4) 4 Credits

Digital forensics course plays very crucial role in investigating computer related crime. In this course, the different methods for the identification, investigation and analysis of digital evidences are examined. The course

aims to present these concepts in a general setting that is not tied to one particular operating system. During this course, students will learn about core forensics procedures to ensure court admissibility of evidence. This course also includes the different methods for the identification, investigation and analysis of malicious code using various network and system-monitoring tools to examine and assess how malware interacts with the file system, registry, network and other processes in order to detect, analyze, understand, control, and eradicate malware. Further, the students will be able to utilize memory forensic techniques to examine, predict and compare capabilities of malware. It blends theoretical concepts with lots of real life examples and case studies to ensure practical exposure and through understanding all the digital forensics artifacts.

CSL545 Cloud Security

(2-0-4) 4 credits

This course provides a basic introduction to big data and corresponding quantitative research methods. The objective of the course is to familiarize students with big data analysis as a tool for addressing substantive research questions. The course begins with a basic introduction to big data and discusses what the analysis of these data entails, as well as associated technical, conceptual and ethical challenges. This includes practical exercises to familiarize students with the format of big data. It also provides a first hands-on experience in handling and analyzing large, complex data structures.

CSL546 Cloud and its Security

(2-0-4) 4 Credits

This course takes you on a tour of cloud computing systems and its security challenges. During this course, students will develop the necessary skills to identify possible security issues in the cloud environment. This course starts with basics of cloud, cloud security concepts covering encryption and presence of suspect in cloud, cloud security architecture and consequently discuss different ways to secure a cloud. In this course, students will be able to: Understand important concepts of cloud computing such as types of cloud computing, deployment model, virtualization, etc. Design, implement and manage complete cloud computing systems. Identify security issues in cloud computing and different ways to store data safely on cloud.

CSL547 Applied Cryptography

(2-0-4) 4 Credits

This course deals with the underlying principles of cryptography, an indispensable tool for protecting

information in computer system. In this course, students will acquire knowledge on standard algorithms used to provide confidentiality, integrity, and authenticity. Starting from the classical ciphers to modern day ciphers, the course provides exposure regarding construction and cryptanalysis of symmetric key ciphers. It also covers stream cipher, public key ciphers, key exchange algorithm, one way functions, Message Authentication Codes (MAC) and signature schemes. Finally, it concludes with the design rationale of network protocols for key exchange.

CSL548 Network Hacking & Security

(2-0-4) 4 Credits

This course delivers the technical knowledge, insight, and hands-on training students need to identify attacks on network with confidence. This course covers various aspects of network security including security issues in different layers of networks, intrusion detection, prevention and defense against cyber-attacks. Students will be guided through a series of laboratories and experiments in order to understand and analyze different attack/defend scenarios and determine the effectiveness of particular defense deployments against attacks.

CSL549 Secure coding vulnerabilities and mitigation

(2-0-4) 4 Credits

This course deals with security architecture elements within modern object-oriented programming languages that create the framework for secure programming. This course would cover the design and implementation of secure systems. Coding Standards, best practices, guidelines and style will further enhance the ability to develop secure code. This course includes common software vulnerabilities and how to find them, as well as how the vulnerabilities can be exploited using reverse engineering & its tools. It also includes how buffer overflow attack happens and how attackers utilize it to gain access to the vulnerable system. Finally, at the end popular web SQL injection attack, and their common defense is implemented

CSL551 Foundation of Data Science

(2-0-4) 4 Credits

Introduction to Computer Science, Computer Algorithms, Computer Hardware , Operating Systems—Bridging Software and Hardware , Limits of Integrated Circuits Technology: Moore's , Computer Software , Procedural vs. Object-Oriented Programming, Literals , Variables and

Identifiers , Operators, Expressions and Data Types, What Is a Control Structure, Boolean Expressions (Conditions), Relational Operators, Membership Operators, Selection Control, Multi-Way Selection, Iterative Control, While Statement , Infinite loops, Definite vs. Indefinite Loops, Boolean Flags and Indefinite Loops, List Structures, Common List Operations, Tuples , Nested Lists, For Loops , While Loops and Lists (Sequences), Assigning and Copying Lists , Dictionary Type in Python, Set Data Type , Programme Routines , Defining Functions, More on Functions , Calling Value-Returning Functions, Calling Non-Value-Returning Functions, Parameter Passing, Arguments in Python Default Arguments in Python, Variable Scope, Recursive Function, Module Specification , Top-Down Design, Developing a Modular Design of the Calendar Year Programme, Object-Oriented Programming concepts, Numpy - Creation on Array ,Array generation from Uniform distribution, Random array generation, reshaping, maximum and minimum, reshaping, Arithmetic operations, Mathematical functions, Bracket Indexing and Selection, Broadcasting, Indexing a 2D array (matrices); Pandas - Creating a Series - from lists, arrays and dictionaries, Storing data in series from intrinsic sources, Creating DataFrames, Imputation, Grouping and aggregation, Merging, Joining, Concatenation, Find Null Values or Check for Null Values, Reading data from csv, txt, excel, web, Visualization - Installing and setting up visualization libraries, Canvas and Axes, Subplots, Common plots - scatter, histogram, boxplot, Logarithmic scale, Placement of ticks and custom tick labels, Pandas Viz, Style Sheets, Plot type, Area, Barplots, Histograms, Line Plots, Scatter Plots, BoxPlots, Hexagonal Bin Plot, Kernel Density Estimation plot (KDE), Distribution Plots, Categorical Data Plots, Combining Categorical Plots, Matrix Plots, Regression Plots, Grids.

CSL555 Advanced Machine Learning

(2-0-4) 4 Credits

Overview to machine learning and pre-processing concepts, Model Selection, Model Selection, XGBoost. Feature Selection- Filter and Wrapper, Dimensionality Reduction, Principal Component Analysis PCA, Linear Discriminant Analysis LDA, Kernel PCA, Introduction to Self-Organizing Maps (SOM), Building a Self-Organizing Map. Overview of clustering in machine learning, Different categories of clustering algorithms, similarity/distance measures, K Means algorithm, Hierarchical, DBSCAN, Fuzzy C-Means , Agglomerative clustering algorithm, Expectation maximization (EM) for soft clustering. Semi-supervised learning with EM using labeled and unlabeled data., Evaluation methods, A case study with clustering implementation, Eclat, Reinforcement Learning, Upper Confidence Bound UCB, Thompson.

CSL556 Data Engineering**(2-0-4) 4 Credits**

Introduction to Data Engineering (Definitions, Applications and examples) and Data Warehouse, Need of Data Warehouse, Types of Data Warehouse, functions of data warehouse tools and utilities, Process flow in Data Warehouse, Applications of Data Warehouse. Different views in Business Analysis framework, Three-tier Data Warehouse Architecture, Data Warehouse Models, Differentiate between OLAP and OLTP, Types of OLAP servers, OLAP operations, ETL, Process of ETL, Need of ETL, Challenges in ETL systems, Data Wrangling, Goals of Data Wrangling, Importance, How different from ETL, Combining and Merging Data Sets, Bitmap Index and Join index, OLAP Server (ROLAP, MOLAP, HOLAP), Creation of Data Warehouse and Cubes, Regular Expressions (Regex), Data Aggregation, Association Rules. Introduction to Google Cloud Platform, GCP Setup, CloudSQL (RDMS) (OLTP), Cloud Spanner (RDMS) (OLTP), Big query (OLAP), Data Prep (UI for Dataflow) and Cloud Composer Airflow.

CSL558 Computer Vision**(2-0-4) 4 Credits**

Elements of digital image processing, Image model, Sampling and quantization, Relationships between pixels, Image Transforms, Discrete Fourier Transform, Discrete Cosine Transform, Haar Transform, Hadamard Transform, Image Enhancement, Enhancement by point processing, Spatial filtering, Enhancement in the frequency domain, Color Image Processing, Image Segmentation, Discontinuity detection, Edge linking and boundary detection, Thresholding, Region oriented segmentation, Use of motion for segmentation. Introduction to CV, Introduction to Face Detection, Face Detection with OpenCV, Object Detection Introduction, Object Detection with SSD, Generative Adversarial Networks (GANs) Introduction.

CSL559 Neural Networks and Deep Learning**(2-0-4) 4 Credits**

Introduction to ANN, Building an ANN, Evaluating, Improving and Tuning the ANN, Restricted Boltzmann Machine, CNN Introduction-Building a CNN, Evaluating, Improving and Tuning the CNN RNN Introduction - Building a RNN Evaluating, Improving and Tuning the RNN, LSTM, Boltzmann Machine Intuition, Building a Boltzmann Machine, Auto Encoders Fundamentals Building an Auto Encoder, Types of Encoder, Deep Learning NLP Chat bots: Introduction to NLP (Natural Language Processing), Deep NLP Introduction, Building a ChatBot with Deep NLP.

CSL561 Business Intelligence and Data Visualization**(2-0-4) 4 Credits**

Introduction to data analysis, Data processing, Fundamental of Data Visualization Compare and Contrast, Business Intelligence, User Interface -Tableau Desktop. Dashboards and Stories Building a Dashboard, Dashboard Layouts and Formatting, Exploratory vs. Explanatory, Statistical test, Preprocessing, Multidimensional Visualization, Infographics, Level of Details, Building Gapminder in Tableau, Basic Geo-Coding for Tableau, Animations, Introduction to Knime Analytics Platform, Knime workbook, Data exploration, modeling and reporting in Knime, Database operation, web, date and time, loops in knime, advance reporting, Introduction to SQL, Joins, subqueries, store routine, SQL and Tableau problems.

CSL565 Web Application Security**(2-0-4) 4 Credits**

This course offers you the knowledge and skills to build better and more secure web and mobile applications. It starts with importance of web security, working of web, strengths and weakness of web, factors that makes web vulnerable, and illustrates fundamental countermeasures that every web application should implement. Throughout the course, you will gain insights into the threats that modern web applications face and their countermeasures, not only in theory, but also in practice. Later, this course focuses on various mobile threats and exploits. Particularly, this course emphasize on android applications as these applications are the biggest surface of attacks.

CSL566 Blockchain and Cryptocurrency**(2-0-4) 4 Credits**

This course introduces blockchain, a revolutionary technology that enables peer-to-peer transfer of digital assets without any intermediaries. It is designed to provide students with an understanding of key concepts and developments around cryptocurrencies and distributed ledger systems. It develops a basic understanding of blockchain technology while covering basic properties of bitcoin, the mechanics behind it (e.g. including cryptographic hash functions, Bitcoin Script, privacy, and hash commitment schemes). It also demonstrates some of the blockchain use cases in technology, business and enterprise products. Other aspects of course include building a blockchain network and cryptocurrency and challenges in adoption of blockchain technology.

CSL567 Vulnerability Assessment and Penetration testing

(2-0-4) 4 Credits

This course is focused on the practical side of penetration testing whilst including necessary theoretical details. It will make students learn how to protect users from cyber attackers by becoming an ethical hacker. It takes students from a beginner to a more advanced level, by the time course finishes students will be able to launch attacks and test the security of computers. It commences with different ways of gathering information about the target and consequently discusses various ways to discover and exploit large number of vulnerabilities to gain access. Thereafter, it includes what you can do with the access you gained from exploiting the above vulnerabilities and ways to maintain that access.

CSR118,119,218,219,318,319,418 General Proficiency

(0-1-0) 1 Credit each

General proficiency evaluation is conducted in the 8th semester where a student will be evaluated for his achievements and participation in extra-curricular activities throughout four years and also for his academic excellence. The evaluation is based on academic performance, co-curricular activities in sports, cultural fest etc., social outreach, general awareness, soft skill development and outstanding achievements.

CSS101/102/201/202/301/302/401/402 Community Service

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CSS501/502/601/602 Community Service

(0-0-2) 1 Credit

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several

outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

CST201 Industrial Training

(1-0-2) 2 Credit

Exposure to the industrial atmosphere and subsequent placement of young graduating engineers in industries across the country is of the essential today. At the end of semester 4, students are sent to industries of interest areas for 6-8 weeks to have hands on experience and exposure to industrial environment. The students are exposed to the professional environment and learn the technical and behavioural skills. They are continuously monitored by internal faculty supplemented by a visit to the company by the same faculty during their training. At the end of training, they are evaluated.

CST301 Industrial Training

4 Credit

Exposure to the industrial atmosphere and subsequent placement of young graduating engineers in industries across the country is of the essential today. At the end of semester 6, students are sent to industries of interest areas for 6-8 weeks to have hands on experience and exposure to industrial environment. The students are exposed to the professional environment and learn the technical and behavioral skills. They are continuously monitored by internal faculty supplemented by a visit to the company by the same faculty during their training. At the end of training they are evaluated.

CSV100 Basic Computer Skills for Professionals

(0-0-4) 2 credits

Introduction to MS Word-Creation of Simple document, Editing text working with table and graphic, Formatting documents use of tools like spell-check, Hyphenation, mail-merge printing of documents-envelopes and labels. Introduction of MS Excel, Meaning of Workbook opening of excel sheet and workbooks .Formulating and printing workbooks/sheets. Formulas and functions, graphs and chart and Introduction to power point ,Introduction to Python and Computer Programming,

Data types, Variables, Basic input output operations, Basic Operators, Conditional Execution, Loops, Lists, Dictionaries, Functions.

CSV101 Skill Development

(0-0-2) 1 Credit

(Python to be taught to Cyber Security & Forensics, Blockchain and Full Stack specializations) Python concepts, expressions, values, types, variable, programmes & algorithms, control flow, file I/O, the python execution model, list, set, dictionary (mapping), tuple, graph (from a third-party library). List slicing (sublists), list comprehension (shorthand for a loop). Mutable and immutable data structures. Distinctions between identity and (abstract) value, procedural abstraction, function as values, recursion and function design methodology. Data abstraction, modules, objects. (Web Development to be taught to Cloud Computing, Data Science and AI&ML specializations) HTML4 and HTML5 tags, CSS2, CSS3, selectors, advanced selectors, input data validation, animation, flex box, box model, Bootstrap, internet resources, JavaScript basics, variable, control structures, operators, DOM and MVC framework. (Adobe Photoshop to be taught to GameTech, AR and VR specialization) Photoshop's interface, crop and resize images, work with color to edit and manipulate images, combine aspects of several images into one professional images, work with layers, paint using Photoshop's many tools, add text to images, create and use gradients, remove objects from images without leaving an empty space, making it look like the image was edited, select objects easier and better way, use of filters to manipulate the look and feel of images.

ECC509 Seminar

0-0-4(2)

Independent study on any recent research area of Electronics and Communication Engineering in the domain of Communication Engineering or VLSI Design, as per the specialization chosen by the student.

ECD512 Minor Project

0-0-10(5)

Hardware and software implementation of the latest research work in the domain of Communication Engineering or VLSI Design, as per the specialization chosen by the student. It has to be done under the guidance of a faculty and students are expected to complete literature survey, feasibility testing, develop or implement the research work.

ECD602 Dissertation-II

0-0-24(12)

Completion of the research work and dissertation report submission, which was undertaken as ECD605. Simulation or hardware implementation of new or recent technological research trend under the guidance of a faculty, students are expected to complete literature survey, feasibility testing, circuit design, component arrangement, development and publications. It is the continuation of ECD605, and is in the domain of Communication Engineering or VLSI Design, as per the specialization chosen by the student.

ECD605 Dissertation-I

0-0-12(6)

Simulation or hardware implementation of new or recent technological research trend under the guidance of a faculty. Students are expected to complete literature survey, feasibility testing, circuit design, component arrangement, development and publications. It has to be carried out in the domain of Communication Engineering or VLSI Design, as per the specialization chosen by the student.

ECL110 Basic of Electrical & Electronics Engineering

(2-0-2)3 credits

Elements in an Electrical circuit: R, L, C, Diode, Voltage and current sources, open-circuit and short-circuit, D.C. Circuits: KCL, KVL, Mesh analysis, Nodal analysis, star-delta transformation, Introduction to Internet of Things and its applications, D.C. Network theorems: Thevenin's, Maximum power transfer, single phase a.c. Circuits: RMS and average value of voltage and current, form factor, peak factor, series RL, RC, RLC circuit, phasor diagram, complex power, rectifier, clipper, clamper, BJT: common base, common emitter.

ECL252 Micro Controllers & Sensors

(2-0-4) 4 Credits

Introduction to microcontrollers, difference between microprocessors and microcontrollers, classification of microcontrollers, their applications, Introduction and definition of Internet of things, IoT growth, Application areas, characteristics, IoT Stack, Baseline technologies, Communication protocols, Overview of Atmega328P microcontroller & NodeMCU, Interfacing digital & analog sensors, display modules and actuators with Arduino Uno, posting data on cloud, creating a webserver, posting data on web page, interfacing

modules like GPS, GSM and Bluetooth with nodemcu, Raspberry Pi basics and programming in python, interfacing HaT, Camera module, display modules and sensors with Raspberry Pi.

ECL255 Digital Electronics and Computer Architecture

(3-0-2) 4 credits

Digital signal, Logic gates, Number system, Boolean Algebra and Switching functions, Minimization Techniques,

Combinational circuits, Logic Modules and their functions, Sequential circuits and their applications, Digital Logic

families, Microprocessor design, Synchronous Finite State Machine Design, Software(Intel Quartus Prime), Advances in Technology, Current applications of digital electronics, Case studies and analysis of Real time Situations.

ECL256 Embedded Systems

(2-0-4) 4 Credits

Importance of Embedded Systems, Applications, Indian and Global Market. Microprocessors vs Microcontrollers. RISC and CISC Architectures. Low-level and high-level embedded programming concepts. 8051 microcontroller: Register and Memory architecture. Addressing Modes, Arithmetic and Logical Operations, Delay Subroutines, Timers, Serial Communications, Interrupt handling, Interfacing with LED, LCD, ADC, DAC, DC Motor Control, and Sensor. PIC controller and ARM cortex M3 processor: Architecture, pipelining, instruction sets, addressing modes.

ECL263 - CMOS VLSI Design & Layouts

(2-0-4) 4 credits

VLSI design styles, MOS transistor, Enhancement and Depletion MOS transistors, Threshold Voltage, Fabrication and Modeling, MOSFET Scaling, CMOS Inverter, transfer characteristics, Power, Delay and Energy parameters, Combinational CMOS Logic Design, Stick diagrams, Clocked Latch and Flip flop circuits, Dynamic CMOS logic, Latches and Registers, Single Stage Amplifiers, Differential Amplifiers, CMOS operational amplifiers, Design of Arithmetic Building Blocks. The course will be project based course with more weightage of hands-on project work to be done on industry software-CADENCE EDA

ECL264 - RTL Design & Synthesis

(2-0-4) 4 credits

The Verilog HDL constructs are being used in sophisticated digital system designs. It starts from simple design concepts to the more complex. The Verilog constructs interprets a design at various design stages and design abstractions, including behavioural, dataflow, and structure description to meet the design specifications. It includes Design automation with Verilog, Design with Verilog, Combinational circuits in Verilog, Sequential circuits in Verilog, Language utilities, Test methodologies. The Logic Synthesis using Verilog HDL covers how to write accurate Verilog descriptions of digital systems (combinational and sequential) that can be synthesized into digital system net lists with desirable characteristics with a focus on common pitfalls in the development of synthesizable Verilog HDL and methods for avoiding them.

ECL281 VLSI Design

Overview of VLSI Design: Historical perspective, overview of VLSI design methodologies, VLSI design flow, design hierarchy, concepts of regularity, modularity, and locality, VLSI design styles, design quality, packaging technology, CAD technology, MOS Transistor ,I-V characteristics, C-V characteristics, non-linear I-V effects, DC transfer characteristics, Introduction to ASIC and SoC, Overview of ASIC flow, functional verification, CMOS Process Technology: Fabrication process flow- basic steps, the CMOS n-Well process, layout design rules, stick diagram, full-custom mask layout design, MOS Inverter (Static Characteristics): Resistive-load inverter, inverter with n-type 16 MOSFET load, CMOS inverter, MOS Inverters (Switching Characteristics and Interconnects effects): Delay-time definitions, calculation of delay times, logical efforts, inverter design with delay constraints, estimation of interconnect parasitics, calculation of interconnect delay, Bus vs. Network-onChip (NoC), switching power dissipation of CMOS inverters. Combination CMOS Logic Circuits: MOS logic circuits with depletion nMOS loads, CMOS logic circuits, complex logic circuits, CMOS transmission gates (pass gates), ratioed, dynamic and pass transistor logic circuits, Sequential MOS logic circuits: Behaviour of bi-stable elements, SR latch circuits, clocked latch and flip-flop circuits, CMOS D-latch and edge-triggered flip-flop. Timing path, Setup time and hold time static, example of setup and hold time static, setup and hold slack, clock skew and jitter, Clock, reset and power distributions.

ECL282 Digital System Design

RTL-GATE level, synthesis, synthesis optimization techniques, pre-layout timing verification, static timing analysis, floor-planning, placement and routing,

extraction, post layout timing verification, extraction.

Semiconductor Memories: Memory Design, SRAM, DRAM structure and implementations Recent Trends in VLSI Design & its research issues in industry: System case studies. Design automation of VLSI Systems: basic concepts. Deep Sub-micron Technologies: Some Design Issues

ECL316 Wireless & Mobile Communication

(2-0-4) 4 Credits

Mobile Radio Systems around the world, examples of Wireless Communication Systems, Co-channel interference Analysis- Hand over Analysis, Call flows, 3G and 4G technologies, WIMAX, LTE, VoLTE, Multiple Access Techniques, Large scale path loss, propagation mechanisms, Small scale fading, parameters of multipath channels, Mobile radio propagation.

ECL352 Design for IOT 1

(2-0-4) 4 Credits

Design for longevity/energy efficiency needs to be highlighted. Step-by-step system design to be introduced. Security in IoT, Recognize security vulnerabilities, such as weak configurations, unpatched systems. Design of Arduino IDE libraries and function, IoT platforms, End to End Communication, Design of circuits using heat sinks.

ECL353 Design for IoT 2

(2-0-4) 4 credits

Security in IOT- Security Requirements in IoT Architecture, Security in Enabling Technologies, Security Concerns in IoT Applications, threats, authentication procedure, Attack & Fault trees, Encryption and Decryption, Hashes, Digital Signatures, Random number generation, Cipher suites, key management fundamentals, cryptographic controls built into IoT messaging and communication protocols, Identity life cycle, , IoT IAM infrastructure, Authorization with Publish / Subscribe schemes, access control, privacy protection trust models, cloud services and security mechanisms for cloud. Cloud computing paradigm for data collection, storage and computing, everything as a service and cloud service models, IoT cloud based services using Xively, Nimbits and other other platforms. Big Data Platform, Big data Pipeline, Recommendation in IoT gadgets. Prototyping Embedded Device software, Devices, gateways, Internet and web/ cloud services Software development, Prototyping Online Components APIs and web APIs. Building an IOT System, Use Azure IoT Hub to connect, monitor, and control billions of Internet of Things assets. Study and deployment of IoT projects as platform-as-a-service (PaaS), IFTTT, Case studies.

ECL366 - VLSI Physical Design

(2-0-4) 4 credits

VLSI physical design flow, Introduction to Libraries, Floorplanning, Placement & Routing, Technology File, Design planning, Clock and power planning, Clock tree synthesis, STA Concepts, Configuring the STA Environment, Clock Uncertainty, Clock Latency, Generated Clocks, Constraining Input Paths, Constraining Output Paths, Timing Verification, Setup Timing Check, Hold Timing Check, Multicycle Paths, Physical Verification, DRC, LVS, ERC

ECL367 Introduction to 5G Technologies

(2-0-4) 4 Credits

Basics of communication, Moving from 4G to 5G, Dual Connectivity in 5G Networks, Increased Wireless Spectrum of 5G And Its Properties, OFDMA, 256 QAM As Modulation Technique In 5G Networks, Cloud Radio Access Network (CRAN) in 5G Networks, MIMO, Massive MIMO and , Beamforming in 5G: Antennas For mmWave, 3D Beamforming, 5G Antennas for massive MIMO, NOMA, LTE-Advanced, 5G-NR, NB-IoT, SDN, 5G spectrum, 5G Network Architecture, 5G USE-CASES/ APPLICATIONS in IOT, and AI/ML IN 5G.

ECL368 Security in IoT

(2-0-4) 4 Credits

Fundamentals, Architecture of IoTs, IoT Security Requirements, IoT Privacy Preservation Issues, Attack Models - Attacks to Sensors in IoTs, Attacks to RFIDs in IoTs, Attacks to Network Functions in IoTs, Attacks to Back-end Systems, Security in Front-end Sensors and Equipment, Prevent Unauthorized Access to Sensor Data, M2M Security, RFID Security, Cyber-Physical Object Security, Hardware Security, Front-end System Privacy Protection, Networking Function Security-IoT Networking Protocols, Secure IoT Lower Layers, Secure IoT Higher Layers, Secure Communication Links in IoTs, Back-end Security -Secure Resource Management, Secure IoT Databases, Discussion on security threats on specific IoT applications, General Cyber Security concepts in IoT, Security threats in IoT (Unauthorized access, Side-channel attacks, Safety risks), Security Products-Existing Testbed on Security and Privacy of IoTs.

ECL381 VLSI Verification and Testing

Physical faults and their modeling. Fault equivalence and dominance; fault collapsing, Fault

simulation: parallel, deductive and concurrent techniques; critical path tracing. Test generation for combinational

circuits: Boolean difference, D-algorithm, Podem, random etc. Exhaustive, random and weighted test pattern generation; aliasing and its effect on fault coverage. PLA testing: cross-point fault model, test generation, easily testable designs. Memory testing: permanent, intermittent and pattern-sensitive faults; test generation. Delay faults and hazards; test pattern generation techniques, ATPG and its different types Test pattern generation for sequential circuits: ad-hoc and structures techniques scan path and LSSD, boundary scan Built-in self-test techniques: LBIST and MBIST. Verification: logic level (combinational and sequential circuits), RTL-level (data path and control path). Verification of embedded systems. Use of formal techniques: decision diagrams, logic-based approaches. ASIC/IP Verification, direct and random testing, Error detection and correction codes.

ECL382 Introduction to Micro fabrication

History of IC's; Operation & Models for Devices of Interest: CMOS and MEMS. Electronic Materials: Crystal Structures, Defects in Crystals, Si, Poly Si, Si Crystal Growth. Clean room and Wafer Cleaning: Definition, Need of Clean Room, RCA cleaning of Si. Oxidation, Lithography: Diffusion, Pre-Deposition and Drive-in Diffusion Modeling, Dose, Ion Channeling, Multi Energy Implantation, Thin Film Deposition: Physical Vapor Deposition: Thermal evaporation, Resistive Evaporation, Electron beam evaporation, Laser ablation, Sputtering Chemical Vapor Deposition: Advantages and disadvantages of Chemical Vapor deposition (CVD) techniques over PVD techniques, reaction types, Boundaries and Flow, Different kinds of CVD techniques: APCVD, LPCVD, Metalorganic CVD (MOCVD), Plasma Enhanced CVD etc., Etching: Anisotropy, Selectivity, Wet Etching, Plasma Etching, Reactive Ion Etching. Overview of Interconnects, Contacts, Metal gate/Poly Gate, Metallization, Problems in Aluminum Metal contacts, Al spike, Electromigration, Metal Silicides, Multi-Level Metallization, Planarization, Inter Metal Dielectric

ECL479 - Introduction to IoT

(2-0-4) 4 credits

Introduction to microcontrollers, difference between microprocessors and microcontrollers, classification of microcontrollers, their applications, Introduction and definition of Internet of things, IoT growth, Application areas, characteristics, IoT Stack, Baseline technologies, Communication protocols, Overview of Atmega 328P microcontroller & Node MCU, Interfacing digital & analog sensors, display modules and actuators with Arduino Uno, posting data on cloud, creating a webserver, posting data on web page, interfacing modules like GPS, GSM and Bluetooth with node MCU, Raspberry Pi basics and programming in python, interfacing HaT, Camera module, display modules and sensors with

Raspberry Pi.

ECL481 - Fundamentals of cloud computing

(2-0-4) 4 credits

Parallel and Distributed System Models, Cloud & Fog enabling technologies, Cloud Platform Architecture, Service Oriented Architecture, Cloud Programming and Software environments, Performance Scalability and Consistency on Cloud & fog, Cloud & Fog Security.

ECL482 Semiconductor Packaging and Testing

Overview of electronic systems packaging: Introduction and Objectives of the course definition of a system and history of semiconductors, Products and levels of packaging, Packaging aspects of handheld products, Case studies in the application, Semiconductor Packaging Overview, Wafer fabrication, inspection and testing, Wafer packaging; Packaging evolution, Chip connection choices, Wire bonding, Current trends in packaging, Electrical Design considerations in systems packaging (L. Umanand): Electrical Issues - I Resistive Parasitic, Electrical Issues - II; Interconnection, CAD for Printed Wiring Boards, Technology file generation from CAD, Screen-printing technology, Through-hole manufacture process steps, Panel and pattern plating methods, Solder mask for PWBs, Multilayer PWBs; Introduction to microvias, Microvia technology, and Sequential build-up technology process flow for high-density interconnects, Conventional Vs HDI technologies; Flexible circuits. Surface Mount Technology, thermal Design considerations in systems packaging, Introduction to embedded passives: Need for embedded passives, Design Library, Embedded resistor processes, Embedded capacitors; Processes for embedding capacitors.

ECL483 Semiconductor Equipment Design and Technology

Fundamentals of vacuum technology, technology of vacuum pumps, diaphragm pumps, vacuum blowers, diffusion pumps, cryogenic pumps, turbomolecular pumps, pumps for ultra-high vacuum, sputtering, plasma etching, CVD, epitaxy, electron spectroscopies Plasma Science and Technology, Plasma physics, Introduction to Plasma Reactors, RF and microwave power sources and coupling, Applications in processes- etching, deposition, sputtering, ashing

ECL485 Semiconductor materials synthesis and characterization

Principles of extraction, pyrometallurgical processes, material and heat balance of processes, thermodynamics

of processes; introduction to laws, thermodynamic equilibrium, thermochemistry, Ellingham diagram. Process kinetics; introduction to chemical kinetics and rate processes, heterogeneous kinetics, kinetics of liquid-liquid reactions, concepts of reactor design. Structure & properties of molten liquids. Production of metallurgical grade (MG) Si, Production of electronic grade (EG) Si: Concept of fluidized bed reactor, Siemens Process. Crystal Growth: Crystal growth processes (Bridgman and its variants, Czochralski), heat and species transfer during non-steady and steady state plane-front growth, interface instability and effect of convection on interface stability. XRD (Bulk and thin film), Microscopy (Optical, SEM, TEM, SPM), UV-Visible spectroscopy, Photoluminescence, Raman spectroscopy.

ECL505 Advanced Digital Communication

3-0-2(4)

Random variables and Processes, Communication over additive Gaussian noise channels, Signal Space representation, Scalar and vector communication over Memory less channels, Additive white Gaussian noise, matched filter and error probabilities, AWGN Channels, M-Ary Orthogonal signals and matched filters, Carrier recovery and symbol synchronization in signal demodulation, Phase estimation, Communication over band limited channels, Nyquist criterion for zero ISI, Decision feedback.

ECL507 System design & Modeling

3-0-2(4)

Digital circuit design fundamentals, including Boolean algebra, logic gates, and finite state machines. MOS Transistor Theory, Register Transfer Level (RTL) design, Low-Power Design Techniques, Design of Arithmetic Building Blocks, Memory Cells Design, Physical design and layout considerations, floorplanning, routing. System-level design aspects power optimization, clock distribution, and timing closure complemented by hands-on experience with CAD tools and project work for practical application.

ECL509 Optimization theory & Applications

3-0-2(4)

Basics of optimization theory, numerical algorithms, and applications. The course is divided into three main parts: linear programming (simplex method, duality theory), unconstrained methods (optimality conditions, descent algorithms and convergence theorems), and constrained minimization (Lagrange multipliers, Karush-Kuhn-Tucker conditions, active set, penalty and interior point methods). Applications in engineering, operations,

finance, statistics, etc. will be emphasized. Students will also use MATLAB's optimization toolbox to obtain practical experience with the material.

ECL513 Machine Learning

2-0-2(3)

Statistical Decision Theory - Regression, Classification, Bias Variance, Linear Regression, Multivariate Regression, Gradient Descent, Feature Scaling, Linear Classification, Logistic Regression, Decision Trees, Regression Trees, Random Forests, Multi-class Classification, Naive Bayes, K Nearest Neighbours, Perceptron, Support Vector Machines (SVM), Principal Components Analysis (PCA)

ECL523 Digital VLSI Design

3-0-2(4)

MOS Transistor Theory, Fabrication and Modeling, MOSFET Scaling, CMOS Inverter, Transfer characteristics, Combinational MOS Logic Design, BiCMOS logic gates, Sequential MOS Logic Design, Static and Dynamic Latches and Registers, Low-Power Design Techniques, Design of Arithmetic Building Blocks, Clock Strategies for Sequential Design, Memory Cells Design: Dynamic Random Access Memories (DRAM), Static RAM, non-volatile memories, flash memories, low-power memory; Case Study (instructor may choose any suitable digital system; in the following, an example is suggested) : A RISC Processor - Instruction Set, Pipeline Architecture, Major Logic Blocks, Layout, Functional Verification.

ECL524 Low-Power VLSI Design

3-0-2(4)

Need for low-power VLSI Chips, Sources of Power dissipation-static and dynamic, transistor sizing and technology scaling, Device & Technology Impact on Low Power, Power estimation Simulation Power analysis: SPICE level circuit simulation, gate level logic simulation, Monte Carlo System, Probabilistic power analysis, Low Power Design Circuit level, Logic level, Low power Architecture & Systems, Low power Clock Distribution Methodology; Signal Drivers and buffers, skews, clock network. Architectural level power estimation and advanced developments in low-power VLSI design.

ECL527 Digital System Design with Verilog HDL

3-0-2(4)

ASIC Design Flow, Language Constructs and Conventions in Verilog HDL, Combinational Logic Design, Sequential Logic Design, Architecture of FPGA, Behavioral Modeling,

Modeling Techniques, State Machine, Moore and Mealy State Model, User Defined Primitives, Programming Language Interface, Current Trends.

ECL528 Analog VLSI Design

3-0-2(4)

Introduction to MOS Device Physics, Small Signal & Large Signal Models of MOS & BJT transistor. Single Stage Amplifiers; Differential Amplifiers, Passive and Active Loaded Differential Amplifiers: Common Emitter, Common base, Common Collector, Common Drain, Common Gate & Common Source Amplifiers, Current Mirror Circuits, Frequency Response of Amplifiers, CMOS Operational Amplifiers, Stability and Frequency Compensation, Design of two stage MOS Operational Amplifier, two stage MOS operational Amplifier with cascodes, MOS telescopic cascode operational amplifiers, MOS Folded-cascode operational amplifiers

ECL529 Linux & Scripting

3-0-2(4)

Introduction to Unix and Linux, Command and Utility Syntax, Linux file and directories, Creating files, Creating directories, Disk utilization information, File and directory permission and privileges, Job and process management, Scheduling Jobs, Text editors- vi, vim editors, Editing files, Running C/C++ on Linux compiler, Tcl scripting, Commands, Data types, Variables, Operators, Arrays, Strings, Lists, Dictionary, Shell scripting, if-then scripts, loops, Aliases, User and Global Aliases.

ECL532 Embedded System Design

3-0-2(4)

Introduction to ESD, Emulator, RTOS, Task, Semaphores and Shared Data Operating system, Processor selection in Embedded System (Microprocessor V/s Microcontroller), Detailed Architecture of 8-bit Microcontroller 8051, Embedded System Development, Networks for Embedded Systems, Introduction to 32-bit controller (ARM7)

ECL538 Hardware Software CoDesign

3-0-2(4)

Introduction to hardware & software co-design, Hardware Software back-ground and Hardware Software co-design research, Co-design concepts as functional decomposition and virtual machines, Methodology for co-design and Unified representation for Hardware

& Software, Abstract Hardware & Software model, Performance Evaluation, Object oriented techniques in hardware design

ECL540 Real Time Systems and Software

3-0-2(4)

Real-time Versus Conventional Software, Computer Hardware for Monitoring and Control, Data Flow Diagrams, State machine, Software Engineering Issues. Process and State-based Systems model, Requirements and Design Specifications, Declarative Specifications & Deterministic Scheduling, Execution Time Prediction & Timer Applications, Programming Languages & Operating Systems. RISC Microcontroller, ATM Switch, etc.

ECL578 Broadband Communication

3-0-2(4)

Broadband networks and services, ISDN, broadband ISDN, B-ISDN standards and interface, B-ISDN protocol, ATM technology -VP,VC,ATM Packet, ATM Network Management, ATM digital exchange interface Management, Internet Telephony and voice over IP (VoIP)- RTP and RTCP, Next generation internet, multicasting in internet, real time communication over internet, Internet and web Traffic measurement and characterization.

ECL581 Micro & Nano fabrication

3-0-2(4)

Introduction and overview of micro and nano fabrication technology. Safety and contamination issues in a cleanroom. Overview of cleanroom hazards. Basic process flow structuring. Wafer type selection and cleaning methods. Additive fabrication processes. Material deposition methods. Overview of physical vapour deposition methods (thermal, e-beam, molecular beam evaporation) and chemical vapour deposition methods (PE-CVD, MOCVD, CBE, ALD). Pulsed laser deposition (PLD), pulsed electron deposition (PED). Doping: diffusion and ion implant techniques. Optical lithography fundamentals, contact lithography, stepper/scanner lithography, holographic lithography, direct-laser writing. Lithography enhancement methods and lithography modelling. Non-optical lithography; E-beam lithography, ion beam patterning, bottom-up patterning techniques. Etching process: dry and wet. Wet etch fundamentals, isotropic, directional and anisotropic processes. Dry etching process fundamentals, plasma assisted etch process, Deep Reactive Ion Etching (DRIE), Through Silicon Vias (TSV). Isotropic release etch. Chemical-mechanical polishing (CMP), lapping and polishing. Packaging and assembly, protective

encapsulating materials and their deposition. Wafer dicing, scribing and cleaving. Mechanical scribing and laser scribing, Wafer bonding, die-bonding. Wire bonding, die-bonding. Chip-mounting techniques

ECL583 Semiconductor Equipment & Technology

3-0-2(4)

Semiconductor Design Equipment, Pattern Generator, Plotter, Engineering Workstation, Logic Simulator, Circuit Simulator, Design Equipment, Logic Analyzer, Photolithography Processing Equipment, Thin Film Deposition, Etching, Cleaner, & Dryer, Inspection and Metrology Equipment & Others, Single Crystal Growing Furnace, Slicer, Lapping Equipment, Polishing Equipment, Grinding Equipment, Wafer Marking Equipment, Slicer, Lapping Equipment, Polishing Equipment, Grinding Equipment, Wafer Marking Equipment, Photoresist Processing Equipment, Surface Conditioning Equipment, Wet Etching Equipment, Dry Cleaning Equipment, Wet Cleaning Equipment, Wafer Scrubber, Drying Equipment, High Pressure Jet Cleaner, Atmospheric Pressure CVD, Subatmospheric CVD, Low Pressure CVD, Plasma Enhanced CVD, MetalCVD, ALD, Sputtering Equipment, Assembly & Packaging equipment: Molding Equipment, Deflasher, Sealing Furnace, Solder Plating Equipment, Solder Ball Mounter, Trim & Forming Equipment, Marker, Clean Room facility: Clean Bench, Clean Tunnel, Thermal Chamber, Environmental Chamber, Air Shower, Pass Box

ECL584 Semiconductor Material Synthesis & Characterization

3-0-2(4)

Elemental and compound semiconductor materials, structural, electronic and optical properties. Crystallography, surfaces and interfaces, thermodynamics, kinetics, and mechanisms of nucleation and growth of crystals. Chemical vapor deposition and physical vapor deposition, while also studying stress effects in film growth. Imaging techniques like scanning electron microscopy (SEM) and transmission electron microscopy (TEM) will be covered, alongside diffraction techniques including X-ray diffraction (XRD) and electron diffraction. Spectroscopy techniques such as X-ray photoelectron spectroscopy (XPS), X-ray absorption spectroscopy (XAS), photoluminescence, and Raman spectroscopy. Profilometry techniques like optical profilometry and ellipsometry will be discussed, along with atomic force microscopy (AFM) and its variants like conductive AFM (CAFM) and Kelvin probe force microscopy (KPFM). Basics of electrical measurements including resistivity, Hall effect, and capacitance-voltage measurements, opto-electronic measurements and basics of high-frequency measurements.

ECL585 Semiconductor Packaging and Testing

3-0-2(4)

This course will provide an overview of packaging technology. It will also provide guidance on analysis, design, assembly test and manufacturing of semiconductor, overview of IC Design, Overview of packaging, Traditional packaging, advanced packaging, OSAT Industry overview, Detailed description of semiconductor assembly & test factory, safety procedures in assembly test factories, clean room practices, supply chain logistics, basics of equipment and utility maintenance, quality and reliability basics, assembly & test line operations, PCB basics, package design basics, package design simulations.

ECL586 ASIC's & FPGA

3-0-2(4)

Introduction to hardware description languages, types of modeling, dataflow modeling, behavioral modeling, structural modeling, use of package for structural modeling, finite state machine modeling. Introduction to ASICs: Introduction to ASICs, ASIC design flow, types of ASICs, full custom ASIC, standard cell based ASIC, Gate array based ASIC, channeled gate array, structured gate arrays, programmable logic devices, introduction to programmable logic, fixed versus programmable logic, programmable logic devices, types of programmable logic devices, PROMs, PLA, PAL, CPLD & FPGA. Introduction to FPGA, evolution of programmable devices, conceptual diagram of a typical FPGA, Logic blocks, interconnection resources, FPGA versus ASIC, applications of FPGA, FPGA design flow, and implementation process. FPGA Architecture Various classes of FPGAs, symmetrical array, row-based, hierarchical PLD, sea-of-gates. Programming technologies, static RAM programming technology, antifuse programming technology, EPROM and EEPROM programming technology, commercially available FPGAs, general architecture of Xilinx FPGAS, CLB Interconnect. Physical Design Circuit partitioning algorithm, K-L algorithm, floor planning algorithm, cluster growth roof planning, introduction to placement & routing. VLSI Testing Basic concepts to testing, yield and reject rate, ATPG, ATPG design flow, various stuck at faults BIST.

ECL587 VLSI Design Verification & Testing

3-0-2(4)

Verification Guidelines: Verification Methodology, Data Types, Procedural Statements, Task and Functions, Routine Arguments, Local Data Storage, Basic OOP, Static and Global variables, Objects and Classes, Connecting the Testbench and Design, Stimulus Timing, SystemVerilog Assertion, Four-Port ATM Routers, Randomization,

Constraints Details, Pre and Post Randomization, Threads and Interprocess Communication, Events, Semaphore, Mailbox, Testbench Building, Advanced OOPs and Guidelines.

ECL588 MEMS & NEMS

3-0-2(4)

Overview of MEMS and NEMS technology, applications of micro and nano electro mechanical systems, materials for mems, microsystems packaging, essential packaging technologies, design of MEMS and NEMS, mems system-level design methodology, equivalent circuit representation of mems, signal-conditioning circuits, and sensor noise calculation. MEMS sensors: design of acoustic wave sensors, resonant sensor, vibratory gyroscope, capacitive and piezo resistive pressure sensors- engineering mechanics behind these microsensors. Micro actuators: design of actuators, actuation using thermal forces, actuation using shape memory alloys, actuation using piezoelectric crystals, actuation using electrostatic forces (parallel plate, torsion bar, comb drive actuators), micromechanical motors and pumps. Comb drive actuators, nano systems and quantum mechanics: atomic structures and quantum mechanics, molecular and nanostructure dynamics: Schrodinger equation and wave function theory, density functional theory, nanostructures and molecular dynamics, electromagnetic fields and their quantization, molecular wires and molecular circuits.

ECL589 Special Topics in Semiconductor Technologies and Applications

3-0-2(4)

Latest topics on Semiconductor Technologies and Applications are selected by the concerned faculty to teach them to the students.

ECL590 Advanced Microcontrollers and Sensors

3-0-2(4)

Introduction to microcontrollers, difference between microprocessors and microcontrollers, classification of microcontrollers, their applications, Introduction and definition of Internet of things, IoT growth, Application areas, characteristics, IoT Stack, Baseline technologies, Communication protocols, Overview of Atmega328P microcontroller & NodeMCU, Interfacing digital & analog sensors, display modules and actuators with Arduino Uno, posting data on cloud, creating a web server, posting data on web page, interfacing modules like GPS, GSM and Bluetooth with nodemcu, Raspberry Pi basics and programming in python, interfacing HaT,

Camera module, display modules and sensors with Raspberry Pi.

ECL591 Advanced Wireless & Mobile Communication

3-0-2(4)

Introduction to wireless communications: Evolution of mobile radio communications, paging system, cordless telephone system, cellular telephone system, Modern wireless communication systems: 2G networks, 3G networks, Bluetooth and personal area networks. Mobile radio propagation: large scale path loss - Free space propagation model, basic propagation mechanisms. Digital Cellular Transmission, Spread Spectrum Transmissions Local Area & Ad Hoc Networks: LAN Technologies: Evolution of Wireless LAN, IEEE802.11, Physical, Layer, MAC Sub-layer, routing algorithms. Adhoc networks: Characteristics - Performance issues. Overview to Wireless ATM, HYPERLAN, IEEE802.15 Wireless PAN, and Home RF. Bluetooth Cellular concepts: Frequency reuse, channel assignment strategies, handoff strategies, interference and system capacity, improving coverage and capacity in cellular systems, routing in mobile hosts. Mobile IP - DHCP - Mobile transport layer - Indirect TCP - Snooping TCP - Transmission / time-out freezing - Selective retransmission -Transaction oriented TCP.

ECL592 IoT: Architecture and Protocols

3-0-2(4)

Introduction to IOT, Applications of IOT, Use cases of IOT, The IoT Architectural Reference Model as Enabler, IoT in Practice: Examples: IoT in Logistics and Health, IoT Reference Model: Domain, information, functional and communication models; IoT Reference Architecture: Architecture, Functional, information, deployment and operation views; SOA based Architecture, API-based Architecture, OPENIoT Architecture for IoT/Cloud Convergence. Application Protocols for IoT: UPnP, CoAP, MQTT, XMPP. SCADA, WebSocket; IP-based protocols: 6LoWPAN, RPL; Authentication Protocols; IEEE 802.15.4. Case study: Cloud-Based Smart-Facilities Management, Healthcare, Environment Monitoring System.

ECL593 Design for IOT

3-0-2(4)

Design for longevity/energy efficiency needs to be highlighted. Step-by-step system design to be introduced. Security in IoT, Recognize security vulnerabilities, such as weak configurations, unpatched systems. Design of Arduino IDE libraries and functions, IoT platforms, End to End Communication, Design of circuits using heat

sinks.

ECL594 5G: Technologies, Architecture and Protocols

3-0-2(4)

The requirements and key drivers for 5G wireless development, 5G use cases and services, the key technologies in 5G NR (Dual Connectivity, small Cells, CRAN, Flexible Numerology, massive MIMO etc), 5G Radio Access Technology And Frame Structure, Network Virtualization and Slicing in 5G, The Key elements/ Functions in 5G Core Network, UE and Network Identifiers in 5G, Procedures in 5G (UE Registration, PDU Session establishment, Paging, Tracking Area Update, Handover), Handover in 5G, Xn and X2, 5G Service Based Architecture, Network Slicing, Security in 5G Mobile Networks, Voice Over 5G, 5G UE State Management, 5G PDU Session Types, Attributes and Quality of Service (QoS), 5G Air Interface Channels, Cell Acquisition, Data Scheduling, Paging.

ECL595 Edge and Fog Computing

3-0-2(4)

Fog and Edge Computing Completing the Cloud, Advantages of FEC: SCALE, How FEC Achieves, These Advantages: SCANC, Hierarchy of Fog and Edge Computing, Addressing the Challenges in Federating Edge Resources. Optimization Problems in Fog and Edge Computing, Middleware for Fog and Edge Computing: Design Issues. Data Management in Fog Computing. Applications and Issues.

ECL596 Network and Security in IoT

3-0-2(4)

IoT and cyber-physical systems, IoT security (vulnerabilities, attacks, and countermeasures), security engineering for IoT development, IoT security lifecycle. Network Robustness of Internet of Things Sybil Attack Detection in Vehicular Networks- Malware Propagation and Control in Internet of Things- Solution-Based Analysis of Attack Vectors on Smart Home Systems. Block ciphers, message integrity, authenticated encryption, hash functions, Merkle trees, elliptic curves, public-key crypto (PKI), signature algorithms. Security and Impact of the Internet of Things (IoT) on Mobile Networks- Networking Function Security-IoT Networking Protocols, Secure IoT Lower Layers, Secure IoT Higher Layers, Secure Communication Links in IoTs, Back-end Security -Secure Resource Management, Secure IoT Databases, Security Products-Existing Test bed on Security and Privacy of IoTs, Commercialized Products.

ECL597 Industrial IoT for Smart Cities

3-0-2(4)

Introduction & Industry 4.0 IoT in smart city & their distinctive advantages like smart environment, smart streetlight, smart water management, Smart Road & Traffic, Smart Parking & waste management. The Fourth Revolution, LEAN Production Systems, Smart and Connected Business Perspective, Smart Factories. IoT Smart City Sensing and Power Management Smart Sensors and actuators as per requirement for Smart Cities, air quality, noise pollution measured using Electrochemical Sensors, Ultrasonic Sensors, IR, Obstacle, Proximity. IoT Data Acquisition System, Energy harvesting, Battery based systems, Power management. Interoperability for Smart City IoT systems Wireless communication modules and topology such as Zigbee, Bluetooth, GSM module, Wi-fi module & Things speak (IoT Platform) cloud, Ethernet, M2M Wireless Sensor Network (WSN). Module IV Software Defined Network Arduino Programming, Integration of Sensors and Actuators with Arduino, Raspberry Pi, Implementation of IoT with Raspberry Pi. Smart mobility Smart cities concept and services, traffic congestion, city energy consumption, IoT in carriage, solution, opportunities and threats. Application Area of Smart cities IOT Systems Working principle & Use of Geographical Information System (GIS), GPS module for vehicle speed measurement. Connected Parking - LoRaWAN private network.

ECL598 IoT Design for Connected Health Care

3-0-2(4)

Introduction to IoT based Health Care Introduction to IoT applications in smart healthcare & their distinctive advantages - Patient Health Monitoring System (PHMS), Tele-Health, TeleMedicine, Tele-Monitoring, Mobile Health Things (m-health). IoT Smart Sensing HealthCare and Power challenge Concept of Generic Biomedical sensors, Smart Sensors: Monitor health parameters, Wearable ECG sensors, IoT Data Acquisition System, Energy harvesting, Battery based systems, Power management. Interoperability in IoT IoT protocols - Interfacing of Zigbee module to create Wireless sensor network, M2M Wireless Sensor Network, MQTT, COAP, Principle of operation & Application of IoT Gateway Using Wi-Fi and Ethernet. Software Defined Network Arduino Programming, Integration of Sensors and Actuators with Arduino, Raspberry Pi, Implementation of IoT with Raspberry Pi. Internet of Medical Things Data Confidentiality, Data Integrity, Data Protection, Security awareness, Emergent threats: Autonomous, IoT heterogeneity and ubiquity, Physical Environment. Emerging Technologies for Health and Medicine Virtual Reality, Augmented Reality, Artificial Intelligence, Robotics, Industry 4.0.

ECL599 Special Topics in IOT & 5G**3-0-2(4)**

Latest topics on IOT & 5G are selected by the concerned faculty to teach them to the students.

ECL601 Cloud Computing**3-0-2(4)**

Parallel and Distributed System Models, Cloud enabling technologies, Cloud Platform Architecture, Service Oriented Architecture, Cloud Programming and Software environments, Performance Scalability and Consistency on Cloud, Cloud Security. The course examines the most important APIs used in the Amazon and Microsoft Cloud, including the techniques for building, deploying, and maintaining machine images and applications. Students will learn how to use Cloud as the infrastructure for existing and new services.

ECL633 Mixed Signal Design**3-0-2(4)**

Signals, Sampling, Aliasing and Tools: Sampling Techniques and circuits for signal sampling. Mixed signal design challenges and issues. Analog Filters: implementation with Integrator, Analog filtering topology for LP, BP, etc., Analog filters, analog to Digital Converters Digital Filters: Digital to analog Converters, Digital Filtering topology. SNR of data converters: Quantization, SNR Improvement. Design Basics and Noise-Shaping of Data Converters: First and Second Order Noise Shaping. Bandpass Data Converters and A High-Speed Data Converter: Continuous time BP noise shaping. Mixed signal design Applications and latest trends.

ECL659 Global Navigation Satellite Systems and Applications**3-0-2(4)**

Orbit, Space Segment, Ground Segment, Link Budget, Multiple Access, Introduction to Global Navigation Satellite System (GNSS), Global Navigation Satellite System (GNSS), How position is determined by the GNSS? NAVSTAR - Global Positioning System, GLONASS, BDS, NavIC (IRNSS), GALILEO, QZSS, DGNSS, RTK, SBAS, GNSS errors, GNSS correction methods, GNSS-applications, trends and opportunities.

ECS501 Community Service

Community Service (ECS501) is a non-credit course designed to foster a sense of social responsibility and

community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

ECS502 Community Service

Community Service (ECS502) is a 2-credit course designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure. This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

ECS601 Community Service

Community Service (ECS601) is a non-credit course designed to foster a sense of social responsibility and community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

ECS602 Community Service

Community Service (ECS602) is a 2-credit course designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure (SOP). This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

ECT502 Industrial Internship**(7)**

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. Students need to undergo an industrial internship in the domain of their choice.

ECV502 Skill based course**(3)**

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. This will be a specialized course chosen as per the need of the industry, with more emphasis on hands-on practice.

ELC501/ELC502/ELC601/ELC602 Seminar**(1-0-0) 1 credit**

The M.A. weekly seminars will help students to acquire a strong understanding of recent literary trends and enhance their ability to conduct quality research. It will help them to develop their creative and critical faculties by assessing seminal literary texts across all genres through presentations that will be followed by discussions.

ELD501 Research Paper Presentation**2(0-0-4)**

Students will have to present a research paper at the end of the 2nd semester which will aid them to learn the nuances of research and academic writing. These papers will be presented as part of a student seminar, for which training shall be provided to them through weekly seminars.

ELD601 Dissertation-I**5 (0-0-10)**

A dissertation will need to be written by the students to demonstrate their depth of knowledge of literature and language. It is to be submitted at the end of the 4th semester. Students are required to conduct independent work resulting in a thesis at the end which will aid them to learn the nuances of research and academic writing.

ELD602 Dissertation-II**5 (0-0-10)**

A dissertation will need to be written by the students to demonstrate their depth of knowledge of literature and language. It is to be submitted at the end of the 4th semester. Students are required to conduct independent work resulting in a thesis at the end which will aid them to learn the nuances of research and academic writing.

ELL501 Poetry from Chaucer to Milton**(3-0-2) 4 credits**

This course is a brief, selective survey of English literature from Chaucer to the late seventeenth century. The reading list is drawn from a list that includes Chaucer's *The Book of Duchess*, and Milton's *Paradise Lost* (selections). Some of the works of such Elizabethan and Jacobean poets such as Spenser, Donne, and Andrew Marvell will also have a close reading. Students will also be introduced to Cavalier poets.

ELL502 17-18th Century Literature**(3-0-2) 4 credits**

This course is a brief, selective survey of English literature from seventeenth century to eighteenth century. The reading list is drawn from a list that includes Jacobean tragedy, restoration comedy, and fiction. Pope's *Dunciad* will also have a close reading.

ELL503 Drama from Miracle Plays to Shakespeare: 14th-16th Century**(3-0-2) 4 credits**

The present course helps students to look in depth at the gradual development of drama as a literary form in medieval England, attempting to understand the changes in form and content in relation to changes in people and English Society.

ELL504 19th Century Literature**(3-0-2) 4 credits**

The present course helps students develop an understanding and appreciation of the literary development that took place in 19th century Europe. The course covers the early romantics, late romantics, and Victorian novelists along with short stories by Russian writers.. This course also explores the rise of the novel in the particular context of nineteenth-century Britain; responding to rapid social change and the correspondingly shifting understandings of class, gender, sexuality, nation, and culture.

ELL505 Research Methods and Critical Writing**(3-0-2) 4 credits**

As part of this course, the following topics will be discussed with students: Research plan, Research problem, Research Design, Literature Review, Relevant terminologies, Tools of research, Publications, Scope and limitation, Qualitative and Quantitative research,

Selection of Topic, Paper formatting, Citation and indexing, application of theories, Research plan, Research problem, Drafting abstract, proposal, synopsis, thesis statement, Sampling, sampling distribution, Frequency Distribution, Measures of central tendency – mean, mode, median, measures of dispersion, measures of relationship, measures of skewness. Computer based techniques of research, Format: Citation format for print and non- print sources MLA, Chicago Style Manual, APA Style Format.

ELL506 20th Century Literature

(3-0-2) 4 credits

The course provides an introduction to modern and postmodern literature in English. Exploring the rise, peak, and potential demise of the movements, it provides students with the opportunity to engage with the concerns and literary strategies of 20th century fiction. It concentrates further on theoretical approaches to history and the body, as well as how modern and postmodern literature respond to popular culture and other media.

ELL551 Communication Studies

(3-0-2) 4 credits

This introductory level course for communication studies aims to provide students with an understanding of the basics of the field along with an insight into how communication shapes and informs our social life. It will help students learn as to how communication articulates and creates our experience of industrial society, thereby enabling them to work in the media line in a competent manner.

ELL552 Gender Studies

(3-0-2) 4 credits

Feminism, queer studies, and masculinity studies are just some of the perspectives on gender that will be covered in this course. This course is designed to make students aware of the multiplicity of theoretical and methodological approaches within what appears to be the monolithic structure of Feminist and Queer discourse.

ELL553 Language and Linguistics

(3-0-2) 4 credits

The present course helps the students get familiar with the new approaches of the study of language. It aims at imparting the linguistic perspective of the study of English, Theories and concepts of major thinkers- Pre

Saussurean, Saussure and Structuralism, Chomsky and the biolinguistics approach shall be discussed. An The course shall include an introduction to articulation and Classification of English Speech Sounds: Speech mechanism with respect to the role of organs of speech, description of vowels and consonants, place and manner of articulation, monophthongs and diphthongs. Students shall get familiar to Phonemes, Allophones, Syllable Structure, Speech word accent, Stress & Rhythm in Connected Speech and Intonation and shall be able to transcribe words and sentences.

ELL554 Visual Studies

(3-0-2) 4 credits

The present course helps students develop an appreciation for visual arts and culture by helping them understand various kinds of visual experiences like paintings, films, video games, photographs etc., which will in turn help students hone their ability to appreciate art and aesthetics and comment upon artworks in a critically engaged and socially informed manner.

ELL555 Popular Culture Studies

(3-0-2) 4 credits

This course shall serve as an introduction to the field of cultural studies, a discipline which is closely aligned with literary studies. It will focus on several distinct strands of cultural studies and will help students develop an understanding of the different approaches used in the field. The readings for the course have been chosen to familiarise the students with important terms and concepts that are commonly employed for analysis of different cultures. Furthermore, the course shall provide students with the opportunity to study theory as an object of analysis in its own right, and to apply its insights to literary and cultural texts. In so doing, it is hoped that students will begin to question the assumed distinctions between “primary” and “secondary” literature.

ELL556 Forms of Popular Literature

(3-0-2) 4 credits

The purpose of the course is to develop an understanding of ‘Popular’ culture - by incorporating as readings world’s best-sellers and popular texts, through the theoretical lens of cultural and contemporary studies. Through reading of popular genres like romance, thrillers and fantasy, the objective of the course is to introduce students to the theoretical discourses surrounding popular literature and culture.

ELL557 American Literature**(3-0-2) 4 credits**

This course offers a selection of significant American literary works produced from a wide range of writers. These landmark works offer literary snapshots of early colonial experience, the Puritanical setup, the struggle for survival and later for political and cultural independence. Racial prejudices, the search for an American voice, Gender bias and the increasingly multiethnic setup in a fast changing world- all come together under single identity of American Literature.

ELL558 New Literatures in English**(3-0-2) 4 credits**

This paper aims to introduce students to the body of literature being produced by writers from Africa, Caribbean, Canada and Australia. The paper seeks to situate these literatures in terms of the historical circumstances of their countries as settler colonies or as colonies of occupation. The paper will examine the various ways in which different writers negotiate and represent social conditions in their works and the role played by English Language as the language of colonizers while being the language of the world at the same time.

ELL601 Classical Literature (Indian and Western)**(3-0-2) 4 credits**

This course postulates a humanist foundation for English studies. It facilitates an evaluation and exploration of classical Sanskrit, Tamil, Greek, and Latin literature in English translation, outlining its influence and impact on English literature. The paper offers a wide-ranging perspective on the aesthetic, philosophical, and social concerns of classical literature. A key element is the analysis of the poetics in the epics of these languages, including their literary traditions and their representations of a pluralist society in terms of linguistic, religious, and generic diversity. It introduces students to multiple genres and forms, including the epic, tragedy, comedy, the lyric, and the dialogue. The paper lays a foundation in Indian poetics, theories of representation, aesthetics, aspects of Indian theatre, and traditions of story-telling and narrative structures.

ELL602 Indian Literature in English Translation**(3-0-2) 4 credits**

This course offers a selection of significant Indian literary works produced in regional languages and from a wide range of writers. These landmark works offer

literary snapshots of Indian histories, folklore, societal structures such as class and gender, and the aspirations and struggles of men and women who have lived or continue to live through diverse Indian spaces across the length and breadth of the country. The course offers in miniature a “salad bowl” of Indian literary works in translation that illustrate the complexities of Indian identities, and encourages students to probe concepts such as spiritualism, regionalism, the contemporary, and representations of history, class, and gender in Indian writing in translation.

ELL603 Shakespearean Drama and Poetry**(3-0-2) 4 credits**

This course aims to acquaint students with the socio-political and historical events instrumental in forming Elizabethan consciousness along with highlighting the role of William Shakespeare as a pioneer of English Drama. This course attempts to look into Shakespeare’s contribution in enriching English Language and help them identify the discourses within the plays and their relevance in present day and age. While a primary concern will be a grounded understanding of Shakespeare’s use of language, metaphor, characterization, genre, and literary form, we shall simultaneously assess a range of critical approaches—and glance at a few adaptations—that concern themselves with Shakespearean texts.

ELL604 Postcolonial Literature**(3-0-2) 4 credits**

This course aims to familiarize students with Literature written in English from formerly colonized nations in their historical and cultural contexts. Relationship between colonial and indigenous cultural traditions shall be discussed along with the choice of literary forms and language. It aims to introduce the theory of colonial and postcolonial literature, resistance and representation, colonial discourses reflected in different texts written by different writers during and after the colonial times.

ELL605 Literary Criticism**(3-0-2) 4 credits**

The present course helps students develop an understanding and appreciation of the literary development theory beginning with the Greco-Romans and going up to the 20th criticism. A study of the theorists will acquaint the students with the main trends of literary history.

ELL606 Literary Theory**(3-0-2) 4 credits**

This course will provide a survey of contemporary theory and twentieth-century thought. It will focus on several distinct though often related critical schools or movements, including Marxism, Structuralism, Post-Structuralism, Feminism, New Historicism, Cultural Studies, Post-Colonial Theory, and Ecocriticism. The readings for the course have been chosen to introduce some of the terms and concepts that have become critical touchstones for many scholars in literary and cultural studies. Furthermore, the course shall provide students with the opportunity to study theory as an object of analysis in its own right, and to apply its insights to literary and cultural texts. In so doing, it is hoped that students will begin to question the assumed distinctions between "primary" and "secondary" literature.

ELL651 Literature from the Margins**(3-0-2) 4 credits**

This course analyzes the socio-economic conditions, social histories, and current challenges confronting various racial, ethnic, sexual, gender, and other minority groups across the globe. Various competing theoretical frameworks are utilized, and the general relationship between dominant- marginalized groups is examined.

ELL653 Graphic Narratives**(3-0-2) 4 credits**

This course explores the use of long-form comics (also known as graphic narrative) to articulate concerns related to gender, sexuality, race, caste, nationality, culture and society. It intends to provide critical insights into how graphic narratives are used to represent devastating events in history such as the Iranian revolution and Holocaust. During the course of the study, students will be encouraged to ask as to why comics, traditionally associated with childish or non-serious content, are increasingly used to depict traumatic history and conflicts of both political and personal nature.

ELL655 Science Fiction**(3-0-2) 4 credits**

The present course helps students focus on science fiction as a genre-melding literary art, scientific and philosophical speculation, and the evocation of the peculiar emotion often characterized as the "sense of wonder." It will survey the history of the genre and then delve into representative themes, rhetoric, and methods of storytelling. In addition, we'll examine the composition

of science fiction from a writer's standpoint.

ELL657 Conflict and Memory Studies**(3-0-2) 4 credits**

The course explores the relationships among violence, memory, spaces, and the politics of power. The course begins with an introduction to memory and its poetics. It then uses this foundation to examine the symbolic relationship between trauma and reminiscence.

ELS501/EL502/ELS601/ELS602**Community Service****2 credits**

By participating in community service activities, NCU students contribute to social causes, foster empathy, and develop a sense of civic responsibility. As part of this course, students are expected to complete 140 hours of community service every academic year.

ELT201 Internship**4 credits**

Internships offer invaluable real-world experience, bridging the gap between classroom learning and professional practice. By immersing themselves in a working environment, NCU students gain practical skills, industry insights, and networking opportunities crucial for their future careers. These

hands-on experiences not only enhance resumes but also empower students with a competitive edge in the job market.

END201 Minor Project**4 Credits (0-0-8)**

Minor Project is a 3-credit course to be performed by the students of IIIrd semester of all UG programmes to keep them engaged and fresh with theoretical and practical knowledge that they have received in their first and second semester. Minor project shall also be done in a form of "Project on the Job Training". The purpose of this is to bridge the gap between job requirements and the present competency for an employee. The Minor project will be evaluated on the basis of the submitted report, presentation of the report during mid & final evaluation. At the end of the semester a soft bound project report should be submitted to the supervisor.

END302 Major Project**4 Credits (0-0-8)**

Every student will be assigned a project topic at the end of the fifth semester and it will be pursued by him/her under the supervision of an internal supervisor. The dissertation along with soft copy will be submitted by the students in their respective institutions. The format of the report will be followed by: Executive Summary, Introduction to Company, Review of Literature, Research Methodology, Analysis of Data and Conclusions and Implications and Bibliography. The student shall be required to submit the progress reports as per schedule announced by project guide. Then the report shall be evaluated by external and internal examiners separately. The assessment shall be done on the basis of Viva-Voce and the report.

ENL101 Statistics & Research Methodology-I**3 Credits (3-0-0)**

The present course has been designed to familiarize the students with the nature and importance of statistical tools for data analysis in social science research. It starts with an introduction to the different types of statistics, levels of measurement, and concepts of population sampling. It covers various types of statistical techniques like measures of central tendency, dispersion and correlation. The course also introduces the students to methods of analyzing the differences between groups.

ENL102/ENL102N Principles of Economics**3 Credits (3-0-0)/4 Credits (4-0-0)**

The Economic Way of Thinking: Defining Economics and Microeconomics, Scarcity and choice Basic problems of an Economy

Choice and opportunity cost, Production possibility curve, Capital formation and economic growth. Market Forces of Demand and Supply: What is market competitive v/s. non-competitive market, Demand curve, Supply curve, Changes in market equilibrium, How prices allocate resources. Effects of government intervention – price controls, Demand forecasting – an overview. Elasticity and its Application: The Elasticity of demand, The Elasticity of supply, Short run vs. long-run elasticity, Applications of elasticity of demand and supply. Consumer Choice, Individual and Market Demand, Cost of Production, the Analysis of Competitive Markets, National Income, Money, Inflation.

ENL103 History of Economic Thoughts**3 Credits (3-0-0)**

The content of this course is spread over various schools of thought existing in the arena of Economics. The main topics covered in the course include nature and importance of economic thought, relativist and absolute approaches to economic thought, Mercantilism: views on trade, money and prices, wages and employment, Physiocracy: natural order; net product and circulation of wealth, classical political economy, Adam Smith: theories of value, distribution and growth, Ricardian Economics: value analysis theories of trade and distribution, J S Mill: theory of value, views on production and distribution. Classical Stationary State with special reference to Mill's views, Marxian Economics: Historical Materialism, Theory of Value, Theory of Capital Accumulation, Theories of Crisis, Simple Reproduction Scheme, Veblen's theory of Leisure Class, Essential features of Marginalism, Walras's Theory of General Equilibrium, A General Overview of Marshall's Contribution, Features of Neo-classical economics. Neoclassical Ideology and the myth of self-adjusting market: The writings of John Maynard Keynes.

ENL104 Business Mathematics**3 Credits (3-0-0)**

- 1) To understand the concept of Surds, indices and equations.
- 2) To understand the concept of Limit and Continuity of a function.
- 3) To understand the concept of differentiation and integration and its uses in business.
- 4) To understand the concept and application of determinant and matrices in business.
- 5) To understand the concept of series and sequences and their application in business

Surds and indices, logarithm, common log and natural log, antilog, use of log in calculations, linear and quadratic equations and their solution, functions and graphs – linear, quadratic, exponential and trigonometric functions. Series and sequences and their applications in the solutions of business problems, simple interest and compound interest, present value and annuities. Idea of limits and continuity, differentiation and application of differentiation in the solution of business and economic problems, maximization and minimization problems, Integration, Determinants and matrices and solution of simultaneous equations.

ENL106 Intermediate Microeconomics**4 Credits (4-0-0)**

This course is a sequel to Microeconomics I. The course is designed to provide sound training in microeconomic theory. The main topics covered are consumer theory, production and costs, concepts of economies and scale, market structure and game theory: monopoly market structures, monopolistic competition, interdependence and collusion between firms in oligopoly, formulate a payoff matrix and analyse the choices for firms in game theory, general equilibrium, efficiency and welfare and market failure and asymmetric information.

ENL202 International Trade**4 Credits (4-0-0)**

This course will emphasize both theoretical (mathematical/analytical) models as well as empirical studies of how well those models fit “real world” data. Moreover, the course will frequently compare and contrast alternative theories/conceptions of the nature of international trade and the gains or losses thereof. Understanding the economic intuition behind the technically demanding models as well as thinking critically about the assumptions behind the theories and how well they fit actual trading economies will be a major focus. The rather unique nature of what this course attempts to achieve is underlined by the fact that there is no single textbook that would serve our purpose. This will provide us with the perfect segue then to chip away at the (artificial) barriers dividing trade theory from international finance, economic history, growth, and development theory, and even aspects of political sociology. Moreover, apart from providing us with a chance to re-evaluate the case for “free” trade from different perspectives, our approach will also help us come to terms with the ever-widening breach between varying perceptions of somewhat amorphous (and misleading) terms such as “trade liberalization” and “globalization.” This course is being offered at a very interesting time. Debates surrounding the process of “globalization” have aroused much interest both in academic circles and amongst global citizenry.

This course will provide an excellent opportunity to discuss some of these issues and to use theoretical tools to make sense of the fundamental arguments involved. Since it is not possible to cover all aspects of international trade in class, the lectures will focus on a “core” of major theoretical models, policy analyses, and empirical studies. Student participation will be sought and encouraged.

ENL204 Statistics and Research Methodology-II**3 Credits (3-0-0)**

This course covers the understanding and application of appropriate research designs, research statistics, the use of computers for data analysis and report writing. In this course, students will learn how to identify problems to study, develop hypotheses and research questions, specify independent and dependent variables, check for the validity and reliability of studies and design research projects. The main topics covered in this course are background to research, literature review, nature and types of research, research applications in social sciences and business, questionnaire design, data collection methods, types of data analysis methods, writing qualitative research, nature of quantitative research, data and variables, descriptive statistics, sampling, hypothesis testing, association: correlation coefficients, bivariate regression, ANOVA, writing a quantitative study.

ENL206 Introduction to Econometrics**3 Credits (3-0-0)**

This course aims at providing students with a thorough understanding of core techniques of econometrics with a focus on the application of techniques to economic theories for quantifying relevant factors for economic policy and other decision making. This course will help students to rigorously understand issues in connecting data, statistics and economic theory. The approach would be hands-on practice to help students get comfortable with working with dataset, using economic software package. The main contents of this course are introduction to econometrics, simple linear regression model (concepts, estimation, properties and testing of hypothesis), multiple regression models, identifying and correcting for violation of CLRM assumptions and Specification Analysis.

ENL208 Environmental Economics**3 Credits (3-0-0)**

In Environmental economics, students are taught about the area of economics which studies the financial impact of environmental policies. Environmental economists perform studies to determine the theoretical or empirical effects of environmental policies on the economy. Topics covered are related to designing appropriate environmental policies and analyzing the effects and merits of existing or proposed policies.

ENL209 Behavioral Economics

3 Credits (3-0-0)

This course will help to understand why people make the decisions and predict how others behave in situations in which they interact strategically. The broad topics include Assumptions of Economics and evaluations Game theory and Experimental Game theory Neuroeconomics; Evolutionary Psychology and Economic Psychology Conceptual Framework: Thinking automatically; Thinking socially; Thinking with mental models Methods of Behaviour Economics. Poverty Behavioural Finance; Household finance Auctions Economic Behaviour and Public Policy; Behaviour in macroeconomy. Lessons from Behaviour Economics

ENL210 Fundamentals of Spreadsheet Modeling

3 Credits (3-0-0)

The basic spreadsheet is one of the most powerful and indispensable tools for data analysis that exists. The spreadsheet approach to problem solving is more accessible to managers, as they usually find spreadsheets a natural medium for organizing information and performing "what if" analyses. The emphasis of the course will be on systematic, logical thinking, and problem solving on spreadsheets, illustrated by building and analyzing models of a variety of problems in operations, finance, and marketing. In this course, student will learn how to structure, analyze, and solve business decision problems on Excel spreadsheets. The focus will be on problems involving optimal resource allocation and risk analysis for decisions involving uncertainty; some data analysis and forecasting methods. While the underlying concepts, models, and methods of this course are mathematical in nature, we will develop them on a more intuitive and user-friendly platform of spreadsheets, analyze them using the available Excel commands, tools, and add-ins, perform sensitivity analyses of the solutions, and study their economic interpretations.

ENL211 Fundamentals of Money and Banking

3 Credits (4-0-0)

The course discusses various aspects of money and finance including interest rates, monetary management and instruments of monetary control. The main topics covered include introduction to money: functions and types of money, post-war controversy on the definition of money, theoretical and empirical methods to distinguish money from near money assets, types of monetary system and qualities of good monetary system, Demand for Money : The Classical Quantity Theory, The Keynesian Approach, The Post-Keynesian Approaches - Tobin - 'Liquidity Preference as behaviour

towards risk', Boumol and Tobin - 'The Transactions demand for Cash: An Inventory - Theoretic Approach', Friedman's Theory Supply of Money: Money Creation by the banking system, high powered money and money multiplier, Measures of money supply in India, monetary policy: Targets, goals and the trade-offs among alternate goals, Policy Tools, Lags in Operation, transmission mechanism - classical model, Keynesian model and monetarist model, monetary policy in the open economy, RBI's monetary policy.

ENL212 Corporate Governance and Sustainability

3 Credits (3-0-0)

This course will teach the fundamental theories and practice of corporate governance. This course covers the history of the corporation, boards of directors, the division of profit sharing and various forms of employee ownership and equity ownership among insiders, regulation, shareholder activism, the impact of takeovers and mergers and acquisitions on governance, ethical issues such as conflicts of interest and insider trading, international corporate governance, and policy developments likely to impact the corporation. CSR component is about how business takes account of its economic, social and environmental impacts in the way it operates - maximizing the benefits and minimizing the downsides. The course discussion will be based on these issues.

ENL213 Mathematical Economics

3 Credits (3-0-0)

This course aims at inculcate in students the various concepts of mathematics and its applications in economic theory. The broad topics covered in this course include Differential equations, General formula for first order linear differential equations, homogenous equations, exact differential equations, linear differential equation of second order with constant coefficients, application in economic theories, Multivariable functions, optimization with or without constraints, partial differentiation up to second order, homogeneity of functions and Euler's theorem, total differentials i.e. differential of implicit functions, Matrices and Determinants, Algebra of matrices, inverse of a matrix, solution of system of linear equations (having unique solutions and involving not more than 3 variables), Types of Maxima, the Weierstrass theorem, and local Global theorem, No inequality constraint, Kuhn - Tucker condition, Khun Tucker sufficiency theorem, Solution algorithm, the control problem, calculus of variation, Dynamic programming, Maximum Principles.

ENL215 Public Finance**3 Credits (3-0-0)**

The focus of the course, which draws on microeconomic theory, is on the development of analytical tools and their application to key policy issues relating to the spending, taxing and financing activities of government. Particular emphasis is given to recent developments in public economics, including findings from current research, in areas such as behavioural public economics, new empirical methods and policy innovations. The course aims to give students an appreciation of the analytical methods in economics for the study of the public sector and the role of the state in principle and in practice; to provide a thorough grounding in the principles underlying the role of the state, the design of social insurance and the welfare state and the design of the tax system and to enable students to understand the practical problems involved in implementing these principles.

ENL216 Intermediate Macroeconomics**4 Credits (4-0-0)**

This course introduces the students to formal modeling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context. The main topics covered in this course include Aggregate Demand and Aggregate Supply Curves, Inflation, Unemployment and Expectations - Phillips curve; Okun's law; adaptive and rational expectations; policy ineffectiveness debate and Open Economy Models - Short-run open economy models; Mundell-Fleming model; exchange rate determination; purchasing power parity; asset market approach; monetary approach to balance of payments.

ENL304 Indian Economy**4 Credits (4-0-0)**

This course sets the base for the Indian Economy as a whole and precisely it will help students to learn the nature and characteristics and the development of the Indian economy. The broad topics covered include economic development since independence, population and human development, theoretical basis of Indian economy, policies and performance in agriculture, policies and performance in industry, problems in Indian economy.

ENL306 Economic Growth and Development**3 Credits (3-0-0)**

This course sets the base for the Indian Economy and the difference between the economic growth and economic development as a whole and it also focus on the various theories of Economic Growth. The broad areas covered in the course include Understanding Development: development and underdevelopment economic growth, economic development, Sen's Conception of Development; Income/Output based measures and their inadequacies; PQLI and HDI as indicators of development), Theories of Economic Development: Classical theory of development; Karl Marx theory of development, theory of social change, crisis in capitalism, Schumpeter and capitalistic development, Rostow's Theory of Stages of Economic Growth, Balanced and Unbalanced Growth, Mahalanobis model and Solow model, Approaches to Economic Development: Partial theories of growth and development - vicious circle of poverty, circular causation, Unlimited supply of labour, Big Push, Balanced Growth, Unbalanced Growth, Critical Minimum Effort Thesis, David Ricardo; Low Level Equilibrium Trap, Harrod Domar, Golden Age rule, Sectoral Importance to Development: Role of agriculture, industry and service in economic development.

ENL330 Agricultural Economics**3 Credits (3-0-0)**

The objective of this course is to equip students to analyze and critically assess issues, policies and programmes in the areas of Indian agriculture. The main topics covered include definition, scope and nature of agricultural economics, need for a separate study of agricultural economics, agricultural linkages with other sectors, role of agriculture in economic development (historical evidence from Europe, USA and Japan) and declining importance of agriculture in Economic development, production function analysis, types of farm organisations and their comparative production efficiency, transformation of agriculture, Schultz thesis of transformation of traditional agriculture and Green Revolution in Indian agriculture. Agricultural markets, Agricultural Credit: Importance of credit, Need for Government intervention, agricultural credit system in India. Agricultural Price Policy: Need, Objectives, and instruments of agricultural price policy.

ENL331 Industrial Economics**3 Credits (3-0-0)**

This course is designed to familiarize students with the theoretical and practical application of various theories related to Firm and Industry. The broad topics covered

in the course include concepts of firm, industry and market, organizational forms, separation of ownership from management and control, alternative goals of firm: contributions of R Marris and Williamson, elements of market structure: Sellers' and buyers' concentration, product differentiation, conditions of entry, measurement of sellers's concentration, determinants: economies of scale and barriers to entry, growth of firms: vertical integration, diversification, concepts of mergers and acquisitions, Oligopolistic Conduct: evolution of market structure, economics of advertisement, economics of R & D: Concepts, measurement and market structure and innovation, allocative efficiency: market structure and profitability, productive efficiency: degree of sub optimal capacity.

ENL332 Comparative Economic Development

3 Credits (3-0-0)

The syllabus covers the state of the Indian economy prior and post to Independence and the economic impact of various sectors of the Indian economy. The course focuses on a set of countries, which followed clearly diverse trajectories and patterns of growth to achieve their industrial transition and compares the outcomes of these diverse trajectories on sectoral change, inter-sectoral relations, labour processes and industrial relations and also compares the role of the state in facilitating the respective trajectories. The main topics covered include Introduction and Perspectives on Comparative Economic Development, An Overview of Economic Development of the countries selected for case studies: JAPAN, RUSSIA, UK, Agrarian surplus, the industrial revolution in Britain, the role of state in Industrial and Developmental Transition, the factory system, structure of industrial authority, organisation of work and industrial production, relationship between workers and managers.

ENL334 Economics of Health and Education

3 Credits (3-0-0)

This course provides a microeconomic framework to analyse, among other things, individual choice in the demand for health and education, government intervention and aspects of inequity and discrimination in both sectors. It also gives an overview of health and education in India. The broad areas covered include Role of Health and Education in Human Development, Microeconomic Foundations of Health Economics, Evaluation of Health Programmes, Health Sector in India, Education: Investment in Human Capital, Education Sector in India.

ENL337 Financial Economics

3 Credits (3-0-0)

This course aims at introducing the students to the economics of finance. The broad areas covered in the course include investment theory and portfolio analysis: deterministic cash flow streams, single period random cash flows, CAPM, introduction to derivatives and options; forward and futures contracts; options; other derivatives; forward and future prices; stock index futures; interest rate futures; the use of futures for hedging; duration-based hedging strategies; option markets; call and put options; factors affecting option prices; put-call parity; option trading strategies: spreads; straddles; strips and straps; strangles; the principle of arbitrage; discrete processes and the binomial tree model; risk neutral valuation, Patterns of corporate financing: common stock; debt; preferences; convertibles; capital structure and the cost of capital; corporate debt and dividend policy; the Modigliani-Miller theorem.

ENL338 Introduction to Statistical Programming with R

3 Credits (3-0-0)

The purpose of this course is to set a foundation for full exploitation and creative use of the statistical language for computing and graphics in R. In this course, student will learn to programme in R and how to effectively use R for statistical computing. The course emphasis is on data manipulation and basic statistical analysis. Students will identify appropriate statistical methods for the data or problems and conduct their own analysis using R environment. The main topics covered are introduction to R and RStudio, general introduction to computing, data types, basic operations, control structures and looping in R, data manipulation, probability distributions and simulations, plotting, exploratory data analysis, basic statistical analysis, linear regression.

ENL341 Global economic monetary system

3 Credits (2-1-0)

This course is designed to familiarize students with international financial transactions and monetary aspects of foreign exchange markets. It focuses on forex market participants, transactions, and derivatives instruments. It enables students to understand the crux of international financial market. It also familiarizes the students with international monetary standard and system so that they can understand the transition of monetary system in modern era.

ENL342 Advanced Econometrics**3 Credits (3-0-0)**

This course aims at training students for understanding of advanced techniques of econometrics with focus on applications of econometric tools and techniques to test economic theories, real life observable phenomena and quantify relevant factors determining economic behaviour to assist in policy formulation. This course will help student to rigorously understand issues in connecting data, statistics and economic theory. The approach would be hands-on practice to help students get comfortable with working with dataset using economic software package. The main contents of this course are introduction to econometrics, review of simple linear regression model and multiple regression models, review of CLRM assumptions, Regression with dummy variables, functional forms in multiple regression models, and Simultaneous Equation Models.

ENR101 GP-I**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENR102 GP-II**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENR201 GP-III**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENR202 GP-IV**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also

encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENR301 GP-V**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENR302 GP-VI**1 Credits**

Under General Proficiency, students are encouraged to opt for MOOC courses, certification courses to upgrade their knowledge from time to time. They are also encouraged to take part in various activities conducted by the professional societies and clubs of the University.

ENS101 Community Service (CS-I)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

ENS102 Community Service (CS-II)**2 Credits**

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours

by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

ENS201 Community Service (CS-III)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

ENS202 Community Service (CS-IV)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

ENS301 Community Service (CS-V)

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating

Community is applicable to all Programmes across the University.

ENS302 Community Service (CS-VI)

2 Credits

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

ENT301 Summer Internship

4 Credits (0-0-8)

Summer Internship is to be performed in the summer break (May-July) by the students to keep them engaged as well as to learn the practical usage of what they have learned. Each student must do an internship in a registered company, the duration of the internship is min 4-6 weeks for UG students and Min 6-8 weeks for PG students.

GDP201 Game Design Basics

(2-0-2) 3 Credits

Game Design basics are designed to provide the human-computer interfaces to the game and prepare the game design document, which will be an essential part of the game development. Game Design Document (GDD) is an essential document for students who want to pursue a career in game design or development. It outlines the concept, mechanics, gameplay, story, art, sound, and other elements of a game.

GDP202 2D/3D Game Development

(1-0-4) 3 Credits

Game Development-II course provides an introduction to Unity's 2D & 3D game development tools, scripting in C#, game mechanics, and user interface design. Students will learn how to import and manipulate sprites, add physics to game objects, and create game mechanics

using C# scripts. They will also gain knowledge in designing game levels, creating menus and interfaces, and adding audio and effects to games. By the end of the course, students will have created a polished game and learned how to optimise and publish it for different platforms.

GDP203 Introduction to Game Engine

(1-0-4) 3 Credits

This subject is designed to provide students the opportunity to learn about Unity Game Engine to create a game. Students will learn multiple concepts related to game development, such as terrain creation, level design, and Physics in the game. Collider. Students will also explore the concepts of Animation and Animators.

GDP204 Introduction to AR/VR

(1-0-4) 3 Credits

This course is designed to provide students with the knowledge and skills required to create high-quality AR/VR applications and understand their applications in various fields. Students learn about the basics of AR/VR, hardware and software used in AR/VR, creating AR/VR applications, applications of AR/VR, and the future of AR/VR technologies. The subject is aimed at preparing students for careers in fields such as game development, software engineering, and digital marketing.

GDP205 Programming Using C#

(2-0-2) 3 Credits

This course is designed to equip students with the advanced programming skills required to develop and understand scripting in Games and develop complex software applications using C# programming language. Students learn to write efficient and optimised programmes using C# and also learn the basics of object-oriented programming, exception handling, etc.

GDP206 Programming Concept Using Construct

(1-0-4) 3 Credits

Programming Concepts using Construct is designed to teach students how to create 2D games using the Construct game engine. Throughout the course, students will learn how to use Construct's drag-and-drop interface to create game mechanics, manipulate game objects, and design game levels. They will also learn how to script game logic using Construct's event system and add audio and effects to games. The course will cover a range of topics, such as creating platformer games,

puzzle games, and arcade-style games. By the end of the course, students will have created a polished game using Construct and gained valuable skills in game development, making them well-equipped to tackle 2D game development projects using Construct in the future. to tackle AR development projects in the future.

GDP207 Programming Concept using Scratch

(1-0-4) 3 Credits

This course is designed to provide students with a foundational understanding of programming and game development using Scratch. Students learn about game development, programming concepts, game engines, etc. These courses are aimed at preparing students for careers in game development and programming.

GDP208 Level Design through Game Editors

(1-0-4) 3 Credits

In this subject, Level Design Through Game Editors, students will learn how to design and build levels for video games using popular game editors such as Unity or Unreal Engine. They will learn about the principles of level design, including creating interesting and challenging gameplay experiences, balancing difficulty, and guiding the player through the game world. Students will also learn how to use tools within game editors to create and modify game assets such as terrain, objects, and characters.

GDP209 Introduction to Stop Motion Animation

(1-0-4) 3 Credits

This course aims to teach students the technique of stop-motion animation, which is commonly used in filmmaking. This involves physically manipulating objects in small increments between individual frames that are photographed. When the frames are played back in sequence, the objects appear to exhibit independent motion or change.

GDP211 HTML Basic

(1-0-2) 2 Credits

This course is designed to provide students with the knowledge and skills required to design, develop, and deploy web-based applications. Students learn about the basics of web technology, HTML and CSS, client-side and server-side scripting, web development frameworks, and web security. The subject is aimed at preparing students for careers in web development, web design, and related fields.

GDP212 HTML Game Development

(1-0-2) 2 Credits

The HTML Games Development course is designed to teach students how to create interactive games using HTML, CSS, and JavaScript. Throughout the course, students will learn how to create game graphics and animations using HTML and CSS and how to implement game logic using JavaScript. They will also learn about game design principles, such as game mechanics and user interface design. The course will cover a range of game development topics, such as game physics, collision detection, and sound effects. By the end of the course, students will have created a polished game using HTML, CSS, and JavaScript and gained valuable skills in game development and web design.

GDP301 AR VR Advance

(1-0-4) 3 Credits

In the subject AR VR Advance, students are going to learn the advanced aspects of AR/VR design & development. They will also learn how to create immersive and interactive virtual reality experiences using Unity. Throughout the course, students will learn how to use Unity's VR tools, such as the XR Interaction Toolkit, to create VR applications that can run on various devices, such as Oculus Rift and HTC Vive. They will also learn how to create VR interactions, such as teleportation, object manipulation, and hand tracking.

GDP302 Major Project

(0-0-12) 6 Credits

The Major Project is a comprehensive and complex project that requires students to apply their theoretical knowledge and practical skills to develop a complete 2D/3D Game. The Major Project is usually completed in the final year of the course, and it is a culmination of the knowledge and skills gained throughout the course. Through the project, students learn about game planning, level designing, testing, documentation, and presentation, which are essential skills for a successful career in game development.

GDP303 Multiplayer Programming

(1-0-4) 3 Credits

The Multiplayer Programming in Unity course is designed to teach students how to create multiplayer games using Unity's networking tools. Throughout the course, students will learn how to design and implement networked game mechanics, such as player synchronisation, object spawning, and game state management. They

will also learn how to create game servers, handle client connections, and optimise game performance in multiplayer scenarios. The course will cover a range of topics, such as multiplayer game design patterns, peer-to-peer and client-server networking architectures, and latency mitigation strategies. By the end of the course, students will have created a polished multiplayer game using Unity's networking tools and gained valuable skills in multiplayer game development, making them well-equipped to tackle multiplayer game development projects in the future.

GDP304 Game Development II

(1-0-4) 3 Credits

This subject is designed to provide students with the opportunity to learn about Unreal Game Engine to create a game using C++ programming language. Students will learn multiple concepts related to game development.

GDP305 AI for Game Development

(1-0-4) 3 Credits

The Artificial Intelligence course is designed to teach students how to implement artificial intelligence in games using Unity's AI tools. Throughout the course, students will learn how to design and programme intelligent agents that can make decisions based on various factors, such as player behaviour and game environment. They will also learn how to create behaviour trees, use state machines, and implement pathfinding algorithms. The course will cover a range of AI techniques, such as fuzzy logic and neural networks, and how they can be used to create intelligent and challenging opponents in games. By the end of the course, students will have a solid understanding of how to design and implement AI in games using Unity, making them well-equipped to tackle AI challenges in their future game development projects.

GDP306 Integrating Online Services

(1-0-2) 2 Credits

Integrating Online Services course is designed to teach students how to monetise their games using Unity Ads, a popular ad platform for mobile games, App purchases in the game, and leaderboard implementation in the game. They will also learn how to use libraries to parse JSON or XML data and convert it into a format that can be easily used within the game. This can include populating game objects with data, setting up game rules, and even creating dynamically generated content. Understanding how to parse and work with these formats is an important skill for any Unity developer.

GDP307 Game Development I**(1-0-4) 3 Credits**

This subject is designed to provide students the opportunity to learn about Unreal Game Engine to create a game using Blueprint. Students will learn multiple concepts related to game development, such as terrain creation, level design, and Physics in the game. Collider.

GDP309 Creating 2D/3D Game**(1-0-4) 3 Credits**

2D & 3D Game Project is designed to teach students how to create complex and polished 2D/3D games using advanced techniques in Unity. Throughout the course, students will learn how to implement advanced game mechanics, such as artificial intelligence procedurally generated content. They will also learn how to optimise game performance, create custom editor tools, and publish games on multiple platforms. The course will cover a range of topics, such as lighting and shadows, animation and rigging, and advanced scripting techniques in C#. By the end of the course, students will have created a polished and complex 2D/3D game using advanced Unity techniques and gained valuable skills in game development, making them well-equipped to tackle advanced 2D/3D game development projects in the future.

GDP311 Creating VR Game**(1-0-4) 3 Credits**

Virtual Reality is designed to teach students how to create immersive and interactive virtual reality experiences using Unity. Throughout the course, students will learn how to use Unity's VR tools, such as the XR Interaction Toolkit, to create VR applications that can run on various devices, such as Oculus Rift and HTC Vive. They will also learn how to create VR interactions, such as teleportation, object manipulation, and hand tracking. The course will cover a range of topics, such as VR user interface design, optimisation for VR performance, and implementing VR audio and effects. By the end of the course, students will have created a polished VR application using Unity and gained valuable skills in VR development, making them well-equipped to tackle VR development projects in the future.

JMD402 Graduation Project**(0-0-20) 10 Credits**

The Graduation Project provides students with the opportunity to showcase all their learning during the last three years in an audio-visual format. This project involves

the entire production process, from conceptualisation to pre-production, production, post-production, and final delivery, allowing students to demonstrate their creativity, technical skills, and knowledge of journalism.

JMD404 Dissertation**(0-0-20) 10 Credits**

This course guides students through the process of researching and writing a dissertation on a topic related to journalism and media production. It involves developing a research proposal, conducting in-depth research, and presenting findings in a well-structured academic format. This course teaches students to think critically, follow rules carefully, and give new ideas. By finishing this course, students show they are experts ready for advancement in jobs or studies.

JML101 Translation Skills**(2-1-0) 3 Credits**

Journalism requires reporting and covering specific regions. While India is a multilingual country, even if one writes in English, reporters might have to source the information from the regional languages spoken.

JML102 Development Communication**(2-0-0) 2 Credits**

Development Communication explores the role of communication in facilitating social change, sustainable development, and improving the quality of life for individuals and communities.

In the context of journalism students, studying development communication involves understanding how media can be harnessed to address pressing social, economic, and political issues facing marginalised or underprivileged groups. It encompasses various forms of media, including print, broadcast, digital, and social media platforms.

JML103 Introduction to Journalism**(3-1-0) 4 Credits**

Students will learn the basics of Journalism in this subject. Right from basic principles of journalism in print media to its changed forms in broadcast and digital platforms, this subject will concentrate on the various journalistic terms required in future.

JML104 Reporting and Journalistic Writing**(2-1-0) 3 Credits**

Reporting is one of the most important aspects of Journalism. This subject introduces students to the various ethics and norms of reporting and, at the same time, introduces students to the process of writing for news platforms. From print to radio and digital to television, this subject trains students to write news-based content for different platforms.

JML201 Public Relations and Corporate Communication**(3-1-0) 4 Credits**

Both Public Relations and Corporate Communication are the allied fields of Journalism. Public Relations involves managing the communication between an organisation and its public, aiming to build and maintain a positive image. Corporate Communication encompasses internal and external communications strategies to align messaging, values, and objectives within the organisation and with external stakeholders.

JML202 Data Journalism**(2-0-0) 2 Credits**

Data journalism is a branch of journalism that involves the analysis and presentation of data to uncover and communicate stories. It combines traditional journalistic practices, such as investigating, interviewing, and storytelling, with data analysis techniques. Data journalists collect, process, and analyse data from various sources, including government agencies, research institutions, and private organisations, to discover trends, patterns, and insights that can inform and enrich news reporting.

JML204 Media and Society**(2-1-0) 3 Credits**

This subject delves into how media platforms such as newspapers, television, radio, social media, and online news outlets shape public opinion, influence behaviour, and impact societal norms. Students examine how various social groups, including minorities, women, and marginalised communities, are portrayed in the media. Discussions often revolve around issues of stereotypes, bias, and representation, along with the impact of these portrayals on societal perceptions.

JML231 Business Journalism**(2-0-0) 2 Credits**

Business journalism focuses on reporting news and analysis related to the world of business and finance. It covers a wide range of topics, including corporate developments, financial markets, economic trends, industry analysis, entrepreneurship, and technology's impact on business.

JML233 Sports Journalism**(2-0-0) 2 Credits**

Sports journalism focuses on reporting news and analysis related to the world of sports. It covers a wide range of topics, including game results, player performances, team strategies, coaching decisions, sports business, and the broader cultural impact of sports.

JML301 Media and Contemporary Issues**(3-1-0) 4 Credits**

Contemporary Issues discusses various issues that are ongoing at the national and international levels and that are important for journalism students to be aware of. It increases students' critical thinking by introducing them to the issues and various issues in earlier eras to understand the link between history and the present scenario.

JML303 Global Media**(3-1-0) 4 Credits**

Global Media Course encompasses an exploration of the interconnectedness, dynamics, and influences of media systems worldwide. This subject delves into the role of media in shaping public opinion, disseminating information, and influencing cultural, political, and social discourse on a global scale. Here's a brief overview of key topics covered in a global media subject. The subject explores how media systems operate in different regions and countries and how globalisation processes impact the flow of information, media ownership, and cultural exchange.

JML331 Political Reporting**(4-0-0) 4 Credits**

Political reporting involves the coverage and analysis of news related to government, politics, elections, and public policy. It plays a vital role in informing citizens about the actions and decisions of political leaders, as well as the broader political landscape.

JML333 News Feature Production**(4-0-0) 4 Credits**

Feature journalism, also known as long-form journalism or narrative journalism, involves in-depth reporting and storytelling that goes beyond the who, what, where, and when of traditional news reporting. Instead, it delves into the why and how of a story, providing context, analysis, and human interest elements to engage readers or listeners on a deeper level. It mostly involves the soft side of the news, like art and culture, human interest, and entertainment.

JML401 Contemporary Research**(4-2-0) 6 Credits**

This course introduces students to modern research methods and practices in journalism and media production. It covers qualitative and quantitative research techniques, data analysis, and ethical considerations. Students will learn to design and conduct research projects, interpret findings, and apply insights to media contexts. This course focuses on modern trends and technology, helping students create relevant and influential media content.

JMP101 Digital Media Production and Techniques**(1-0-4) 3 Credits**

Due to Media convergence, news on digital platforms has increased extensively. Be it a print or a Television news channel, all news-based organisation has their presence on digital platforms. This subject introduces students to creating news with limited resources and in limited time. Concepts like Mobile Journalism are introduced to students in this subject.

JMP102 Digital Media Production and Techniques**(1-0-4) 3 Credits**

Due to Media convergence, news on digital platforms has increased extensively. Be it a print or a Television news channel, all news-based organisation has their presence on digital platforms. This subject introduces students to creating news with limited resources and in limited time. Concepts like Mobile Journalism are introduced to students in this subject.

JMP132 Photo Journalism**(1-0-4) 3 Credits**

Photojournalism is a form of journalism that uses images

to tell a news story. It involves capturing photographs that convey news, events, or human interest stories in a visually compelling way. This subject explores how Photojournalists often work for newspapers, magazines, wire services, or online news outlets, documenting current events, social issues, conflicts, and everyday life.

JMP134 Radio and Podcast Production**(1-0-4) 3 Credits**

News-based podcasts are one of the newer ways of storytelling news. This subject introduces students to generating news for audio platforms and recording and editing it to ensure that the final news-based podcast is produced. This subject involves the start-to-finish process of news-based podcast production.

JMP201 Production of Live Shows**(2-0-4) 4 Credits**

This subject introduces students to the various formats of news which are produced live. Mostly, the bulletins, special shows on a special day, talk shows, debates, and guest interviews are streamed live. The shows are not previously recorded but are telecasted live. It introduces students to the technology behind these live shows and prepares them to handle various situations during live news production.

JMP202 Anchoring and Presentation Skills**(1-0-4) 3 Credits**

While reporting and writing is an integral part of Journalism, anchoring is another integral element in Journalism. An anchor who is a presenter of the news needs to develop strong communication skills and an equally attractive personality. Students need to hone all these skills to be effective anchors. This subject trains students to be a news presenters for various platforms like television and digital.

JMP231 Civic and Crime Reporting**(1-0-4) 3 Credits**

Civic beats involve the issues in a particular city by concentrating on the development, day-to-day activities, and issues related to health, hygiene and education. Crime reporting, as the name suggests, introduces students to how a crime story is covered and investigated to be presented in front of the audience. The various norms required to be followed to cover civic and crime news are explored in this subject.

JMP233 Documentary Production**(1-0-4) 3 Credits**

A documentary is a way to explore facts differently. While it is based on facts and truth, journalists often need to understand the documentary production to explore a particular subject in an elaborate style. This subject introduces students to the entire process that goes behind documentary production.

JMP301 Production Management**(1-0-6) 4 Credits**

This course provides students with essential skills in managing media production projects. It covers production planning, budgeting, scheduling, and resource allocation for TV, film, radio, and digital media. Students will learn the roles of production managers, team coordination, and solving production challenges. Emphasising industry standards and legal and ethical practices, this course prepares students to oversee production processes effectively, ensuring timely and high-quality project completion.

JMP401 Virtual Production**(1-0-6) 4 Credits**

This project gives students real-time experience working on a news story in and around the vicinity and creating the entire production ready. From curating the idea and writing the news story to packaging it for a particular platform, this minor project helps students develop their portfolio by producing a news report.

JMP403 Media Post Production**(1-0-6) 4 Credits**

This provides students with an opportunity to gain practical experience in their field of study, apply their learning to real-world situations, and develop new skills and industry connections. It also helps students gain exposure to different industries, work cultures, and job responsibilities, enhancing their employability and preparing them for their future careers.

JMP405 Research for Publication**(0-0-12) 6 Credits**

This subject covers topics such as research design, data collection, and analysis, which are essential for students who wish to conduct research in journalism and its impact on the audience. It equips them with the skills and knowledge necessary to make informed

decisions as they provide a framework for investigating and evaluating news effectiveness.

LBC421 - MOOT COURT**3 Credits (0-0-6)**

Moot Court, Observance of Trial in two cases, one Civil and one Criminal, Interviewing techniques and Pre-trial preparations and Internship diary and Viva Voce examination on all the above three aspects.

LBC422 - Alternative Dispute Resolution**4 Credits (4-1-0)**

Negotiation skills with simulated programme, Conciliation skills, Arbitration Law and Practice including International arbitration and Arbitration rules, case studies.

LBC521 - PROFESSIONAL ETHICS**4 Credits (4-1-0)**

Professional Ethics, Accountancy for Lawyers and Bar-Bench Relations. This course will be taught in association with practicing lawyers on the basis of the following materials which include Mr. Krishnamurthy Iyer's book on "Advocacy", The Contempt Law and Practice, The Bar Council Code of Ethics, Selected opinions of the Disciplinary Committees of Bar Councils and certain major judgments of the Supreme Court on the subject.

LBC522- Drafting - Pleading & Conveyancing**4 Credits (4-1-0)**

(a) Drafting: -General principles of drafting and relevant substantive rules shall be taught (b) Pleadings: - Civil: Plaint, Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Article 226 and 32 of the Constitution of India. Criminal: Complaint, Criminal Miscellaneous petition, Bail Application, Memorandum of Appeal and Revision. Conveyance: Sale Deed, Mortgage Deed, Lease Deed, Gift Deed, Promissory Note, Power of Attorney, Will, Trust Deed. Drafting of writ petition and PIL petition

LBC523- Drafting - Pleading & Conveyancing (3 Y)**4 Credits (4-1-0)**

(a) Drafting: -General principles of drafting and relevant substantive rules shall be taught (b) Pleadings: - Civil: Plaint,

Written Statement, Interlocutory Application, Original Petition, Affidavit, Execution Petition, Memorandum of Appeal and Revision, Petition under Article 226 and 32 of the Constitution of India. Criminal: Complaint, Criminal Miscellaneous petition, Bail Application, Memorandum of Appeal and Revision. Conveyance: Sale Deed, Mortgage Deed, Lease Deed, Gift Deed, Promissory Note, Power of Attorney, Will, Trust Deed. Drafting of writ petition and PIL petition.

LBC524 - MOOT COURT (3 Y)

3 Credits (0-0-6)

Moot Court, Observance of Trial in two cases, one Civil and one Criminal, Interviewing techniques and Pre-trial preparations and Internship diary and Viva Voce examination on all the above three aspects.

LBC525 - Alternative Dispute Resolution (3 Y)

4 Credits (4-1-0)

Negotiation skills with simulated programme, Conciliation skills, Arbitration Law and Practice including International arbitration and Arbitration rules, case studies.

LBC526 – Professional Ethics (3 Y)

4 Credits (4-1-0)

Professional Ethics, Accountancy for Lawyers and Bar-Bench Relations. This course will be taught in association with practicing lawyers on the basis of the following materials which include Mr. Krishnamurthy Iyer's book on "Advocacy", The Contempt Law and Practice, The Bar Council Code of Ethics, Selected opinions of the Disciplinary Committees of Bar Councils and certain major judgments of the Supreme Court on the subject.

LBL110 - Privacy Law

(3-1-0) 4 CREDITS

The course is built around various concept of privacy with a special emphasis on privacy and data protection issues that are a constant companion to technology. The course would cover the following aspects: Jurisprudential underpinnings of Privacy; Right to Privacy and its development; Data Protection and allied issues; Emerging areas and privacy concerns.

LBL111 - Law of Tort

4Credits (4-1-0)

Definition and Nature of the Law of Tort, history of the law of torts, Difference between Tort & Crime, Tort & Contract, and Basis of the tortious liability, Principle of Vicarious Liability, Doctrine of Sovereign Immunity, Joint Tort Feasors, Joint and several liabilities in payment of damages, Negligence as a tort and its various dimensions, Contributory Negligence and Nuisance, General Defenses for the Tortuous Liability, Torts Against Human Being (Assault, Battery, Emotional Distress, Malicious Prosecution and abuse of legal proceedings, Conspiracy, False Imprisonment), Trespass to land & trespass to goods, No fault Liability, Strict Liability and Absolute Liability, Various principles for fixing the liability, Cyber Tort, Statutory Tort, Product Liability and Protection of Consumers' Interest.

LBL112 – LEGAL METHOD

4 Credits (4-1-0)

Concept of Law: Legal Method and Introduction to Legal System, Law object and concerns, what is Law? A discussion from different perspectives, Definition of Law, Nature and function of Law- Farer and Dugdale, Hart's Concept of Law and the Indian Constitution, Sources of Law: Custom as a source of law in India, Statutes and Methods of Interpretation: What Statue law is? Structure of legislation, Rules of Interpretation, Judgment analysis and Precedent: Case Law in the study of Legal Method, Studying Law under the case method, what is precedent? Determining the Ratio-decidenti of a case: Understanding Law Reports, Judicial Activism, Locus-Standi, Judicial Review of India, Legal Systems: The Court Structure of England and Wales, History of Common Law, Legal System in the USA, Legal System in France, Canadian Legal System, Australian Legal / Judicial System, Indian Legal System: Judicial System, Hierarchy of Courts, Indian Court Structure, Legal Research

LBL113 - Law of Contracts – I

4 Credits (4-1-0)

Historical development of law Contract, Formation of Contract, Offer and acceptance, various mercantile and trade practices in offer and acceptances, various rules of offer and acceptance, Agreement and Contract, void, voidable and valid agreements, standard form contract and electronic contract, Competence to enter into contract, conditional and Contingent contract, Quasi Contract, Theory of Unjust Enrichment- Theory of "implied-in-fact" Contract, kinds of government contracts, performance of contracts- settlement of disputes and remedies, part performance of contracts, Supervening and Subsequent impossibility of performance of

contracts, Termination of contract by breach, Remedies in case of breach, Specific performance of contract

LBL114- LAW AND SOCIETY

4 Credits (4-1-0)

Contemporary Problems of Indian Society, Social Inequalities in India, Protection of the rights of vulnerable groups of society: Senior Citizens; differently abled; scheduled castes, scheduled tribes and other backward classes; Gender Justice in India, Gender Discrimination: Fundamental Rights, Sexual harassment at workplace, Indecent representation of women, Dowry Prohibition in India; Domestic violence in India; Human Trafficking in India, Beggars: status and implications, Immoral trafficking, Prostitution, Female Foeticide, Human and Organ Trafficking in India, Child Laws, Child Abuse: Psychological Impact, Problem of Child labour, Child and Education, Child marriage (Prohibition of Child Marriage Act, 2006), Juvenile Justice in India: Contemporary Issues

LBL116 – LAW OF Contracts – II

4 Credits (4-1-0)

Bailment, Pledge, Hypothecation, Lease in lease finance, General and Particular Lien, Assignment – conditionalities, character of the Agreement, Interpretations, other component of drafting, rights and obligations of the parties, Indemnity & Guarantee, liability of Surety and Sureties, General principles of Law of Agency, Rights and obligations of the Agent and the Principal,): Public and Government Contract, Cyber Contract, role of various linking process in Cyber contract, UNCITRAL Model Law in comparison with Indian Law, Sale and Hire Purchase Agreements, Carriage and Transport Contract, Warehouse Agreement, Wholesale and Retail Trade Agreements, Partnership Agreement, Negotiable Instruments.

LBL120 – Intellectual Property and Technology

(3-1-0) 4 credits

Intellectual Property and Technology Law is one of the most important core sectors of any business. It deals with some of the most critical legal areas like protection of technologies, brands, products etc. of a company. Following are the areas would be covered: Overview of the IP System; Copyright and Information Technology; Patents and Information Technology; Trademarks in Cyber Space.

LBL130 – Digital Forensics and Law

(3-1-0) 4 credits

The use of computers in committing crimes have become a common phenomenon and the law enforcement agencies have started using computers to fight against such crimes through digital forensics. Law enforcement agencies are integrating the collection and analysis of digital evidence, also known as computer forensics, into their infrastructure to combat e-crime and gather pertinent evidence for all types of offenses. Topics covered include: Basic understanding of digital forensics; Handling of Electronic Evidence in criminal investigation and the role of law enforcement agencies; Digital Forensic Procedure in India: the role of the Forensic Science laboratories; Digital Forensics and Admissibility of Electronic Evidence.

LBL140 – Law of Contracts

(3-1-0) 4 credits

In day-to-day life every individual makes a variety of promises. Every promise gives rise to an expectation in the minds of other party that, the promisor would perform certain obligation and fulfil the promise towards him/her. Following topics would be covered during the course: Agreement- Meaning and Essentiality; Capacity to contract; Offences against the State and Public Tranquility; Consideration; Limitation on freedom of contract; Discharge of Contract and Remedies for Breach of Contract

LBL150 – Competition Law & Practice

(3-1-0) 4 credits

The course on competition law intends to cover the following topics: Introduction to Competition Law; Anti-competitive Agreements; Abuse of Dominant Position; Regulation of Combinations

LBL161 – CRIMINOLOGY

4 Credits (4-1-0)

Crime Data and Crime Measurement, Rational Choice Theory, Anthropological Theory- Mental Deficiency and Crime, Psychological Criminology, Biology and Crime- Moral Development and Crime, Psychopathy, Antisocial Personality Disorder- Poverty and Crime, Social Disorganization Theory- Strain Theory, Learning Theory, Control Theory- Labeling Theory, Conflict Theory, Feminist Theory- Patterns and Trends in Violent Crime, Property Crime Investigation, White Collar Crime Profiles- Theories of Terrorism, Organized Crime Investigation, Crimes against Public Order, Sex Offenders and Rehabilitation

LBL162- RIGHT TO INFORMATION & ACCOUNTABLE GOVERNANCE

4 Credits (4-1-0)

Access to information- Extent of legal illiteracy, Need to spread knowledge of laws, Citizens Charter, Accountability Commissions, The Lokpal and Lokayukta Act, 2013, Concept of Lokayukta and Lokpal, Concept of Good Governance, Concept of Ombudsman, Gram Sabha and Accountability, Right to information - Fundamental Right? Official Secrets Act, Government Privilege to withhold Disclosure of Documents, Public Inquiries: Commissions of Inquiry appointed by NGOs, Transparency and Right to Information, Problems of legal accountability, Evolution of Right to Information in India, RTI and good governance, Salient features of Right to Information Act, Public Authorities and their Obligations under the Act, Accepting an Information Request, Processing and Disposing, Exemptions from Disclosure of Information, Partial Disclosure and "Third Party" Information, Role of Civil Society Organizations and Media, Records Management for Effective Information Management and Implementation of the Act

LBL170 - Corporate Law

(3-1-0) 4 credits

This course conventionally deals with The Companies Act, 2013 which mainly governs the rules and regulations of setting up of the company. Following topics would be transacted during the course: 'Company' - Definition; Evolution -Comparison between Company and Partnership and Company and Limited Liability Partnership, Limited liability of members/shareholders, Nature and characteristics of company, Kinds of company, Lifting of corporate veil, Promoters - duties and liability of promoters; Memorandum of Association and Articles of Association; Management and Control of Companies; Financial Structure of the Company; Winding up of Company

LBL211 - Constitutional Law - I

4 Credits (4-1-0)

The purpose of the course is to acquaint the students with the Basic Postulates of the Constitution and to give them a picture of Constitutional Parameters regarding the rights and duties accorded to the citizens of India and the corresponding responsibilities of the Government to ensure social welfare. New dimensions of the fundamental rights, their emergence and relevance with the directive principles has been discussed. A citizen's accessibility to justice through their power of filing a writ for the violation of a fundamental right is focused upon with the enhancing diameter of judicial

approach towards their basic duty. A critical analysis of the significant judicial decisions is offered to highlight judicial restraint, judicial passivity, judicial activism and judicial balancing.

LBL213 -Law of Crimes -I (IPC)

4 Credits (4-1-0)

Historical Development of Penal Law in India, Aims and Functions of the Criminal law, Essentials of offences, Stages of an offence: Intention, Preparation, Attempt Commission of offence, Principles of Penal Law, MENS REA AND Actus Reus, Inchoate offences, Jurisdiction of Indian Penal Code, Necessity and objectives of punishment, Different theories of punishment, Modern theory of punishment, General Exceptions to Crimes under Indian Penal code, Right of Private Defence, Offences affecting Human body: Culpable Homicide, Murder, Causing death by negligence, Abetment of suicide, Offences against women, Offences against marriage, Offences against reputation, and Criminal Intimidation, Insult and Annoyance, Offences against property, Offences affecting the public Health, Safety, Convenience, Decency and Morals, Offences against State, Public Peace and Tranquility, Offences Relating to Public Servants, their Authority, False Evidence and Public Justice

LBL214 - Family Law - I

4 Credits (4-1-0)

Sources of Law: Statute, Custom & Usage, Religious Text and Interpretations, Marriage As an institution - defined in various religious forms and types, can marriage be a religious part of civil life -Various forms and requirements of a valid marriage on a comparative analysis Void, voidable and valid marriage in different religious texts and Statutes Inter-community and inter-religious marriage, Restitution of conjugal right & Judicial separation, various grounds, nullity of marriage with grounds and procedure to obtain nullity, Divorce - grounds, by mutual consent - restriction on petition - remarriage - Court's jurisdiction and procedure for the issue raised on marriage and divorce - in camera proceedings - Decree and implementation - Hindu, Christian, Muslim, Parsi, Communities and under special marriage Act, Maintenance during pendency of the suit, maintenance after the dissolution of marriage and conditions, maintenance under Criminal Procedure Code - permanent alimony -Maintenance under Adoption and Maintenance Act, requisite of valid adoption, adoption in different religious groups, Law on Minority and Guardianship Structure of Family court, procedure to be adopted, jurisdiction.

LBL215 - Constitutional Law - II**4 Credits (4-1-0)**

Nature of Federalism in India, Forms of Government: Presidential vis-à-vis Parliamentary form of governance, Division of power: Between Center, State and Local bodies; Between Legislature, Executive and Judiciary; Principles that developed in division of power and check and balances; Sharing of powers; Judicial review, Election of President and Vice President, term of office, qualification and eligibility, Impeachment, Oath of office Constitutional provision on formation of Council of Ministers – advisory function, Collective responsibility – Confidentiality of Cabinet Decisions – Other provisions – Duties of PM, Composition of the House of States and House of the People, Duration, Qualification and disqualification of members, Office of Profit Nature of Indian Judicial System with its distinctive feature, Supreme Court of India, its various powers, Judicial Appointment,, Special Leave appeals, Officers of SCI, Governor of a state, Qualification, Appointment, term, Executive & legislative power and function; Council of Ministers Judicial system in the States, Appointment and conditions of office, Various Powers, Establishment of Common High Court, Constitution of Bench, Transfer of a judge, Emergency power Election Commission, Finance Commission, Comptroller and Auditor General, Attorney General of India, Public Service Commission, National Commission for SC and ST, Inter-state River Dispute Resolution Tribunals, Central and State Service Tribunals.

LBL216 - Law of Crimes (CrPC)**4 Credits (4-1-0)**

Concept and types of criminal justice system, the functionaries under the Code; their duties, functions and powers; Provision for Investigation: Arrest, Search and Seizure, Processes to Compel Appearance and Production of things, Summons procedure, Search Warrants, General provisions as to search and seizure, Appeals, Reference and Revisions, Complaints to Magistrates, Commencement of proceedings before Magistrates, Trials and Execution Proceedings, Appeals, Reference and Revisions, Maintenance of wives, children and parents, Transfer of criminal cases, Irregular proceedings, Limitations for taking cognizance, Compounding of Offences and Plea-bargaining, Security for peace and good behavior, Transfer of cases, Maintenance of Public order and Tranquility, Probation of Offenders Act, 1958, Juvenile Justice (Care and Protection of Children) Act, 2000.

LBL217 -Family Law II**4 Credits (4-1-0)**

Joint Hindu Family, Coparcenary, Dayabhaga & Mitakshara succession, Karta – power & function, Principle of Survivorship and Succession, General Principles of Succession under Hindu Law, Islamic Law, Christian Law, Parsi Law, Statutory conditions of disinheritance and disentitlement; Dwelling house Partition, Women's Property, Comparative analysis of right to property of women under different Religious and Statutory Law, Power of testamentary succession under various religious and statutory Law under Hindu, Islamic, Christian and Parsi Law, Will and Administration of will – Probate, Codicil, execution of privileged and unprivileged Will, attestation, alteration and revival of Will, Right of Pre-emption Gift under Islamic Law, Wakf, Power of Mutawali; Muslim Religious Institutions and Offices, Hindu Religious Endowment.

LBL261 - Competition Law**4 Credits (4-1-0)**

Introduction-Basic economic and legal principles, Restraint of Trade under Indian Contract Act, Monopolistic Trade Practices, Restrictive Trade Practices- Development of law from MRTP to Competition Act 2002, Aims, Objects and Salient features, Comparison between MRTP Act and Competition Act, Anti-Competitive Agreement, Abuse of Dominant Position, Combination, Protection of consumers- Competition Commission Of India, Structure and function of CCI, Regulatory role- Competition Appellate Tribunal. Composition, Functions, Powers and Procedure, Award Compensation, Power to punish for contempt, Execution of orders

LBL263- PENOLOGY & VICTIMOLOGY**4 Credits (4-1-0)**

Penology: Meaning, Definition and Scope, Concept and Necessity of Punishment, Theories of Punishment: Retributive theory, Deterrent theory, Preventive and Reformatory theory, Capital Punishment - constitutionality of capital punishment, judicial approach towards death penalty, Meaning & Scope of Victimology, Types of Victims of Crime, Rights of the Victims of Crime, Provisions regarding Compensation to the Victims of Crime under Code of Criminal Procedure and Indian Penal Code, Compensation under Probation of Offences Act, Compensation to Victim under Motor Vehicle Act, Common Law regarding Compensation in Tort and Civil Law, Judicial trends in Compensatory Jurisprudence, Recommendations of Justice Malimath Committee with respect to compensation to victims of Crime

LBL264: Affirmative Action and Discriminative Justice

4 Credits (4-1-0)

Discrimination has penetrated all societies and at all places without 'reservations'. Phenomenon of discriminations does not discriminate. The Constitutions exhuming constitutionalism have safeguarded the rights of the discriminated and often insular minorities. The lineage of past discrimination is addressed by another set of discriminatory policies known as "affirmative action", "protective discrimination", "positive discrimination", "compensatory discrimination" etc. The Constitution of India, 1950 ("Constitution") was enacted to balance the inequities prevailing in India. In this regard, the Constitution was a social document marked by a transformative vision. There was and still subsists systemic discrimination. The discrimination may be single, double or multi-layered. In a broad brush manner, a few grounds of discrimination are sex, caste, race, religion, sexual orientation, place of birth and, so on and so forth. The Constitution prohibits discrimination per se. When access is denied to public goods, the discrimination assumes an invidious form. But is prohibition on discrimination enough to break the ages old systemic discrimination? Or 'new' forms of discrimination are required to 'reverse' the effects of traditions old discrimination. A contrapuntal arises wouldn't constitutionally sanctioned discrimination violate the equality code of India (Articles 14 to 18)? The answer to these more than simple questions requires agitation of constitutional policy, principles, and judgments which will be undertaken in this course.

LBL265 – Law relating to narcotic drugs and Psychotropic Substances

4 Credits (4-1-0)

The course "Law Relating to NDPS in India" offers an extensive exploration of the legal framework surrounding narcotic drugs and psychotropic substances (NDPS) within the Indian context. This course delves into the historical evolution, regulatory mechanisms, enforcement procedures, and judicial interpretations of NDPS laws. It aims to provide students with a thorough understanding of the legislative and policy issues pertinent to NDPS, facilitating a critical analysis of both national and international dimensions of drug control.

LBL266 – Juvenile justice

4 Credits (4-1-0)

The course will equip students with a comprehensive understanding of the unique legal and social challenges surrounding young offenders. Learning international instruments is crucial for fostering global perspectives

and ensuring students are well-versed in human rights standards. Such a course cultivates a comprehensive understanding of diverse cultural and legal contexts, preparing students for cross-border collaboration and advocacy. The alternative care options into the curriculum ensures that aspiring professionals are equipped to contribute to a more just, humane, and globally informed juvenile justice system. This knowledge is crucial for future professionals in law, social work, and psychology who may work directly with young offenders or contribute to policymaking. Additionally, understanding the juvenile justice system promotes a holistic perspective on criminal justice, encouraging a proactive approach to prevent and address youth crime while considering the best interests of young individuals within the legal framework.

LBL311 – LABOUR Law I

4 Credits (4-1-0)

Historical perspectives on Labour, labour through the ages - slave labour - guild system - division on caste basis -labour during feudal days, Colonial labour law and policy, Labour capital conflicts: exploitation of labour, profit motive, poor bargaining power, poor working conditions, unorganised labour, bonded labour, surplus labour, division of labour and super-specialisation - lack of alternative employment, Theories of labour and surplus value' From laissez faire to welfarism and to globalisation: transition from exploitation to protection and from contract to status : changing perspectives on labour, Trade unionism, Labour movement as a counter measure to exploitation - history of trade union movement in India, Right to trade union as part of human right to freedom of association , Collective bargaining - The concept, International norms - conditions precedent - merits and demerits, Techniques of pressurization : strike and lockout, go-slow, work to rule, gherao, bundh, State prescription of machinery: reference for adjudication, the adjudicatory mechanisms, Unfair labour practices, Discipline in industry, Doctrine of hire and fire - history of management's prerogative., Fairness in disciplinary process, Punishment for misconduct - meaning of misconduct, The right to know : the charge sheet, The right to defend : domestic enquiry, notice, evidence, cross-examination, representation, unbiased inquiry officer and reasoned decision, Prenatal (permission) and postnatal (approval) control during pendency of proceedings, Role of management and labour, Remuneration for Labour.

LBL312 – CoMPANY LAW

4 Credits (4-1-0)

Meaning of Corporation, Theories of corporate personality, Creation and extinction of corporations,

Forms of Corporate and Non-Corporate Organizations, Corporations, partnerships and other associations of persons, state corporations, government companies, small scale, co-operative, corporate and joint sectors, Law relating to companies - public and private - Companies Act, 1956, Need of company for development formation of a company registration and corporation, Memorandum of association - various clauses - alteration therein - doctrine of ultra vires, Articles of association - binding force - alteration - its relation with memorandum of association - doctrine of constructive notice and indoor management - exception, Prospectus - issue - contents - liability for misstatements - statement in lieu of prospectus. Promoters - position - duties and liabilities, shares - general principles of allotment statutory restrictions - share certificate its objects and effects - transfer of shares - restrictions on transfer - procedure for transfer - refusal of transfer- role of public finance institutions - relationship between transferor and transferee - issue of shares at premium and discount - depository receipts - dematerialized shares (DEMAT), Shareholder - who can be and who cannot be a shareholder - modes of becoming a shareholder - calls on shares - forfeiture and surrender of shares - lien on shares. Share capital - kinds - alteration and reduction of share capital - further issue of capital - conversion of loans and debentures into capital - duties of courts to protect the interests of creditors and shareholders, Directors - position - appointment - qualifications - vacation of office - removal - resignation - powers and duties of directors - meeting, registers, loans - remuneration of directors - role of nominee directors - compensation for loss of office - managing directors - compensation for loss of office - managing directors and other managerial personnel, Meetings - kinds - procedure - voting, Dividends - payment - capitalization - profit, Audit and accounts, Borrowing powers - powers - effect of unauthorized borrowing - charges and mortgages - loans to other companies - investments - contracts by companies, Debentures - meaning - fixed and floating charge - kinds of debentures - shareholder and debenture holder - remedies of debenture holders, Protection of minority rights, Protection of oppression and mismanagement - who can apply? - Powers of the company, court and of the central government Investigation - powers and functions.

LBL313 - Law of Evidence

4 Credits (4-1-0)

The main features of the Indian Evidence Act 1861, Other acts which deal with evidence (special reference to CPC, CrPC), Administrative Tribunals, Industrial Tribunals, Commissions of Enquiry, Court-martial, Disciplinary authorities in educational institutions, Evidence : oral and documentary, Circumstantial evidence and direct evidence, Presumption "Proving", "not proving" and "disproving" , Witness, Appreciation of evidence, The

Doctrine of res gestae, Evidence of common intention, The problems of relevancy of "Otherwise" irrelevant facts, Relevant facts for proof of custom, Admissions and confessions, General principles concerning admission, Differences between "admission" and "confession", The problems of non-admissibility of confessions caused by "any inducement, threat or promise, Inadmissibility of confession made before a police, admissibility of custodial confessions, Admissibility of "information" received from accused person in custody; with special reference to the problem of discovery based on "joint statement" , Confession by co-accused, Dying Declarations, "Fraud" and "Collusion" , Expert Testimony Who is an expert? : types of expert evidence , Oral and Documentary Evidence, General principles concerning oral evidence, Issue estoppel, Tenancy estoppel , Witnesses, Examination and Cross Examination, Competency to testify State privilege, General principles of examination and cross examination, Leading questions, Hostile witness, Estoppel, res judicata , presumption Equitable and promissory estoppel, Questions of corroboration.

LBL314 - PUBLIC International Law

4 Credits (4-1-0)

Sources and scope, History, Conflicts between public international law and national sovereignty, Interpretation, State Responsibility, International organizations, league of Nations, UN and regional bodies, Enforcement: by states and by international bodies, International legal theory: Natural law, Grotian school, and Legal positivism, Branches of public international law: Consular law, Diplomatic law, International aviation law, International criminal law, International environmental law, International human rights law, International humanitarian law, International space law, International trade law, Law of state responsibility, Use of force; Introduction to certain contemporary issues: Comparative Corporate Capitalism, European Union Law, Foreign Affairs and the Constitution, Law and Terrorism: Theoretical and Comparative Perspectives, Law, Economics and Politics of International Trade, Transitional Justice

LBL315- Property Law

4 Credits (4-1-0)

Concept of Property, Ownership and Possession, Meaning of Property under the Transfer of Property Act, Kinds of Property - Jura in re propria - Jura in re aliena - Movable, Immovable, Intangible; Theories of Property - Economic and social theories - doctrine of Eminent Domain ; Right to property under the Constitution of India, General Principles of Transfer of Property Rule against perpetuity; Conditional and Contingent Transfer by non-owners and

Co-owners; Transfer under lis pendens; Fraudulent Transfer; Principle of Part Performance, Sale- definition, Agreement to Sale - Rights and Liabilities of the Buyer and the seller; Marshalling by subsequent purchaser; Discharge of encumbrances; Exchange - definition and mode; Exchange vis-a-vis Sale, Rights and liabilities of the parties; Gift - definition and mode of transfer, suspension and revocation, Onerous gift, universal donee; Transfer of Actionable Claims, Mortgage - meaning and purpose Rights and obligations of the mortgagor and mortgagee; Foreclosure, Deemed Foreclosure, Power of Sale, Priority right determination; Marshalling and Contribution, Redemption; Subrogation, Charge - Fixed and Floating charge; rights and obligations of the parties, Lease, Lien, Registration of Transfer Documents Easement & Prescription.

LBL316 - Labour Law - II

4 Credits (4-1-0)

Theories of wages : marginal productivity, subsistence, wages fund, supply, Concepts of wages (minimum wages, fair wages, living wages, need-based minimum , Components of wages : dearness allowance, principle of fixation, Disparity in wages in different sectors - need for nationalization and national approach, Wage determining process - modes and modalities, Unilateral fixation by employer, Bilateral fixation, Conciliation, arbitration and adjudication, Wage Board and Pay Commission, Principles of wage fixation, concept of bonus - computation of bonus, Protection of wages : non-payment, delayed payment, unauthorized deductions - remedial measures, Health and Safety, Obligations for health and safety of workmen - legislative controls : factory, mines and plantations. Employer's liability: Workmen's compensation, Employee's State Insurance, Liability for hazardous and inherently dangerous industries - environmental protection, Labour Welfare, Welfare provided by the employers and through bipartite agreements and by statutory prescription, Provident fund and family pension, Gratuity, Insurance, Inter-state migrant workmen - regulation of employment and conditions of service, Employment of young persons : prohibition of employment of children, regulation of employment of young persons, Woman and labour force, Equal remuneration law, maternity benefits, protective provisions for women under factories, plantations and mines laws, Protection of the weaker sectors of labour , Tribal labour : need for regulation, Unorganized labour like domestic servants : problems and perspectives, Bonded labour : socio-economic programmes for rehabilitation, Contract labour - regulation, Daily wage workers.

LBL317 - Environmental Law

4 Credits (4-1-0)

Concept of environment and Pollution, Environment; Meaning and contents, Pollution - Meaning, Kinds of pollution, Effects of pollution, legal control: historical perspectives, Constitutional Perspectives Constitution making - development and property oriented approach, Directive principles, Status, role and interrelationship with fundamental rights and fundamental duties, Fundamental Duty, Fundamental Rights- ; Rights to clean and healthy environment, Right to education, Right to information, Environment v. development, Enforcing agencies and remedies, Courts: Tribunal, Constitutional, statutory and judicial remedies, Emerging principles, Polluter pays: public liability insurance, Precautionary principle, Public trust doctrine, Sustainable development, Water and Air Pollution , Meaning and standards, Culprits and victims, Offences and penalties, Judicial approach, Noise Pollution, Legal control, Court's of balancing : permissible and impermissible noise, Environment Protection , Protection agencies: power and functions, Protection : means and sanctions, Emerging protection through delegated legislation, Hazardous waste, . Bio-medical waste, Genetic engineering, Disaster emergency preparedness, Environment impact assessment, Coastal zone management, Environmental audit and eco mark, Judiciary: complex problems in administration of environmental justice, Town and country planning, Law: enforcement and constrain, Planning - management policies, Stockholm conference, Greenhouse effect and ozone depletion, Rio conference, Bio-diversity, Wetlands.

LBL318- JURISPRUDENCE

4 Credits (4-1-0)

Definition, nature and scope of jurisprudence, Natural Law- Its development and relevance in modern times, Analytical School, (i) Austin's Theory of Law, (ii) Kelsen's Pure Theory of Law, (iii) Hart's Concept of Law; Historical School, Realist School, Sociological School, Administration of Justice, Socio-economic approach and philosophy, Law and Social Change, Legal Aid, Public Interest Litigation (PIL), Sources and Elements of Law, Sources of Law: Custom, Precedent and Legislation, Rights & Duties, Possession and Ownership, Persons.

LBL321 - LEGAL METHOD (3 Y

4 Credits (4-1-0)

Concept of Law: Legal Method and Introduction to Legal System, Law object and concerns, what is Law? A discussion from different perspectives, Definition of Law, Nature and function of Law- Farer and Dugdale, Hart's Concept of Law and the Indian Constitution, Sources of Law: Custom as a source of law in India, Statutes and Methods of Interpretation: What Statue law is?

Structure of legislation, Rules of Interpretation, Judgment analysis and Precedent: Case Law in the study of Legal Method, Studying Law under the case method, what is precedent? Determining the Ratio-decidenti of a case: Understanding Law Reports, Judicial Activism, Locus-Standi, Judicial Review of India, Legal Systems: The Court Structure of England and Wales, History of Common Law, Legal System in the USA, Legal System in France, Canadian Legal System, Australian Legal / Judicial System, Indian Legal System: Judicial System, Hierarchy of Courts, Indian Court Structure, Legal Research

LBL322- Jurisprudence (3 Y)

4 Credits (4-1-0)

Definition, nature and scope of jurisprudence, Natural Law- Its development and relevance in modern times, Analytical School, (i) Austin's Theory of Law, (ii) Kelsen's Pure Theory of Law, (iii) Hart's Concept of Law; Historical School, Realist School, Sociological School, Administration of Justice, Socio-economic approach and philosophy, Law and Social Change, Legal Aid, Public Interest Litigation (PIL), Sources and Elements of Law, Sources of Law: Custom, Precedent and Legislation, Rights & Duties, Possession and Ownership, Persons.

LBL323 - Law of Contracts - I (3 Y)

4 Credits (4-1-0)

Historical development of law Contract, Formation of Contract, Offer and acceptance, various mercantile and trade practices in offer and acceptances, various rules of offer and acceptance, Agreement and Contract, void, voidable and valid agreements, standard form contract and electronic contract, Competence to enter into contract, conditional and Contingent contract, Quasi Contract, Theory of Unjust Enrichment- Theory of "implied-in-fact" Contract, kinds of government contracts, performance of contracts- settlement of disputes and remedies, part performance of contracts, Supervening and Subsequent impossibility of performance of contracts, Termination of contract by breach, Remedies in case of breach, Specific performance of contract

LBL324 -Family Law II (3 Y)

4 Credits (4-1-0)

Joint Hindu Family, Coparcenary, Dayabhaga & Mitakshara succession, Karta - power & function, Principle of Survivorship and Succession, General Principles of Succession under Hindu Law, Islamic Law, Christian Law, Parsi Law, Statutory conditions of disinheritance and disentitlement; Dwelling house Partition, Women's Property, Comparative analysis of right to property of women under different Religious and Statutory Law, Power of testamentary succession

under various religious and statutory Law under Hindu, Islamic, Christian and Parsi Law, Will and Administration of will - Probate, Codicil, execution of privileged and unprivileged Will, attestation, alteration and revival of Will, Right of Pre-emption Gift under Islamic Law, Wakf, Power of Mutawali; Muslim Religious Institutions and Offices, Hindu Religious Endowment.

LBL325 - Law of Tort (3 Y)

4 Credits (4-1-0)

Definition and Nature of the Law of Tort, history of the law of torts, Difference between Tort & Crime, Tort & Contract, and Basis of the tortious liability, Principle of Vicarious Liability, Doctrine of Sovereign Immunity, Joint Tort Feasors, Joint and several liabilities in payment of damages, Negligence as a tort and its various dimensions, Contributory Negligence and Nuisance, General Defenses for the Tortious Liability, Torts Against Human Being (Assault, Battery, Emotional Distress, Malicious Prosecution and abuse of legal proceedings, Conspiracy, False Imprisonment), Trespass to land & trespass to goods, No fault Liability, Strict Liability and Absolute Liability, Various principles for fixing the liability, Cyber Tort, Statutory Tort, Product Liability and Protection of Consumers' Interest.

LBL326 - Law of Crimes II (CrPC) (3 Y)

4 Credits (4-1-0)

Concept and types of criminal justice system, the functionaries under the Code; their duties, functions and powers; Provision for Investigation: Arrest, Search and Seizure, Processes to Compel Appearance and Production of things, Summons procedure, Search Warrants, General provisions as to search and seizure, Appeals, Reference and Revisions, Complaints to Magistrates, Commencement of proceedings before Magistrates, Trials and Execution Proceedings, Appeals, Reference and Revisions, Maintenance of wives, children and parents, Transfer of criminal cases, Irregular proceedings, Limitations for taking cognizance, Compounding of Offences and Plea-bargaining, Security for peace and good behavior, Transfer of cases, Maintenance of Public order and Tranquility, Probation of Offenders Act, 1958, Juvenile Justice (Care and Protection of Children) Act, 2000.

LBL327 -Law of Crimes -I (IPC) (3 Y)

4 Credits (4-1-0)

Historical Development of Penal Law in India, Aims and Functions of the Criminal law, Essentials of offences, Stages of an offence: Intention, Preparation, Attempt Commission of offence, Principles of Penal Law, MENS

REA AND Actus Reus, Inchoate offences, Jurisdiction of Indian Penal Code, Necessity and objectives of punishment, Different theories of punishment, Modern theory of punishment, General Exceptions to Crimes under Indian Penal code, Right of Private Defence, Offences affecting Human body: Culpable Homicide, Murder, Causing death by negligence, Abetment of suicide, Offences against women, Offences against marriage, Offences against reputation, and Criminal Intimidation, Insult and Annoyance, Offences against property, Offences affecting the public Health, Safety, Convenience, Decency and Morals, Offences against State, Public Peace and Tranquility, Offences Relating to Public Servants, their Authority, False Evidence and Public Justice

LBL328 - Environmental Law (3 Y)

4 Credits (4-1-0)

Concept of environment and Pollution, Environment; Meaning and contents, Pollution - Meaning, Kinds of pollution, Effects of pollution, legal control: historical perspectives, Constitutional Perspectives Constitution making - development and property oriented approach, Directive principles, Status, role and interrelationship with fundamental rights and fundamental duties, Fundamental Duty, Fundamental Rights- ; Rights to clean and healthy environment, Right to education, Right to information, Environment v. development, Enforcing agencies and remedies, Courts: Tribunal, Constitutional, statutory and judicial remedies, Emerging principles, Polluter pays: public liability insurance, Precautionary principle, Public trust doctrine, Sustainable development, Water and Air Pollution , Meaning and standards, Culprits and victims, Offences and penalties, Judicial approach, Noise Pollution, Legal control, Court's of balancing : permissible and impermissible noise, Environment Protection , Protection agencies: power and functions, Protection : means and sanctions, Emerging protection through delegated legislation, Hazardous waste, . Bio-medical waste, Genetic engineering, Disaster emergency preparedness, Environment impact assessment, Coastal zone management, Environmental audit and eco mark, Judiciary: complex problems in administration of environmental justice, Town and country planning, Law: enforcement and constrain, Planning - management policies, Stockholm conference, Greenhouse effect and ozone depletion, Rio conference, Bio-diversity, Wetlands.

LBL329 - Family Law - I (3 Y)

4 Credits (4-1-0)

Sources of Law: Statute, Custom & Usage, Religious Text and Interpretations, Marriage As an institution - defined in various religious forms and types, can marriage be a religious part of civil life -Various forms

and requirements of a valid marriage on a comparative analysis Void, voidable and valid marriage in different religious texts and Statutes Inter-community and inter-religious marriage, Restitution of conjugal right & Judicial separation, various grounds, nullity of marriage with grounds and procedure to obtain nullity, Divorce - grounds, by mutual consent - restriction on petition - remarriage - Court's jurisdiction and procedure for the issue raised on marriage and divorce - in camera proceedings - Decree and implementation - Hindu, Christian, Muslim, Parsi, Communities and under special marriage Act, Maintenance during pendency of the suit, maintenance after the dissolution of marriage and conditions, maintenance under Criminal Procedure Code - permanent alimony -Maintenance under Adoption and Maintenance Act, requisite of valid adoption, adoption in different religious groups, Law on Minority and Guardianship Structure of Family court, procedure to be adopted, jurisdiction.

LBL332 - LAW OF Contracts - II (3 Y)

4 Credits (4-1-0)

Bailment, Pledge, Hypothecation, Lease in lease finance, General and Particular Lien, Assignment - conditionalities, character of the Agreement, Interpretations, other component of drafting, rights and obligations of the parties, Indemnity & Guarantee, liability of Surety and Sureties, General principles of Law of Agency, Rights and obligations of the Agent and the Principal,): Public and Government Contract, Cyber Contract, role of various linking process in Cyber contract, UNCITRAL Model Law in comparison with Indian Law, Sale and Hire Purchase Agreements, Carriage and Transport Contract, Warehouse Agreement, Wholesale and Retail Trade Agreements, Partnership Agreement, Negotiable Instruments.

LBL361 - INTERPRETATION OF STATUTES

4 Credits (4-1-0)

Legislation and its types, Principles of Legislation, Methods of Legislation, Statute and its types- Parts of Statute, Commencement, extent and duration of Statutes, Repeal and revival of Statutes, Amending, consolidating and codifying Statutes- General principles of statutory interpretation, Primary or literal rule of interpretation, Mischief rule, Golden rule, Treatment of general words- Beneficial construction, Strict or liberal construction, Internal Aids to interpretation of Statutes, External Aids to interpretation of Statutes

LBL362- INTERNATIONAL AIR AND SPACE LAW**4 Credits (4-1-0)**

Space Law: Historical Background, Definition and demarcation of outer space, Space technology - Benefits, Shift from air law to space law, Development of the space law - UN contributions, UN General Assembly Resolutions, Space treaties, Principles - A midway approach; Fundamental Principles, Province of all Mankind, National non-appropriation, Freedom of exploration, use and scientific investigation, Common Heritage of Mankind, Jurisdiction and control, Co-operation between the states, Astronauts - Envoys of Mankind, Liability and Registration, Launching state and Registering state, Liability and responsibility regime under the Outer Space Treaty, Absolute liability and fault liability, COSMOS 954 - A case study, State liability / responsibility for private space activities, Registration and identification, Some Problems of Current Concern, Question of state sovereignty and claim of property rights, Human habitation on the moon and other celestial bodies, Protection of the space environment, Demilitarization of the outer space, International Space Station - Inventions in outer space, System of Financing Outer Space Activities, Increasing private space activities, Asset-Based Financing, UNIDROIT Convention and draft Space Protocol, Creation and registration of international interests in space assets, Default and remedies, Loopholes in the UNIDROIT system, National Space Legislation, Need for national space legislation, Commerce oriented approach - US & Australian models, Other approaches - Russian & UK models, Indian position

LBL363- CORPORATE GOVERNANCE AND CSR**4 Credits (4-1-0)**

The aim of this course is to acquaint students with the theory and practice of corporate governance particularly relating to social accountability and reporting. This course examines theories of corporate governance, evaluating the evolution of traditional governance systems to provide incentives to managers in light of increasing demands for accountability, transparency, and social responsibility of managers and business. Issues such as sustainability management accounting/control, reporting, auditing, and verification are also examined and discussed, and the role of drivers such as reporting/governance codes and the investment community in enhancing organizational change toward a sustainable development are critically evaluated. Identify the importance of the theory and practice of corporate governance particularly relating to social accountability and reporting. Critically analyze various provisions regulating different sectors of Corporate. Apply the concept of enforcement of CSR with in the corporate sector.

LBL364- DISASTER, DEVELOPMENT AND HUMAN RIGHTS**4 Credits (4-1-0)**

Human rights, civil liberties, global and regional perspectives on human rights, international humanitarian issues, human rights activism, disaster and emergency relief, child and bonded labour issues, apartheid and racial discrimination, refugees and displaced people, drug abuse, role of UNHCR, Amnesty International, Red Cross, PUCL, PUDR, NHRC, other government and non-government organizations on human rights besides other programmes having social, educational, cultural, economic and legal content for the optimum development of a global sustainable society for the protection of Human Rights in disaster effected areas

LBL411- INTELLECTUAL PROPERTY RIGHTS**4 Credits (4-1-0)**

Introduction to Intellectual Property, Concept of Intellectual Property, Kinds of Intellectual Property, Economic importance of Intellectual Property, Philosophical Justification of Intellectual Property Western Theories on Private and IP, Locke's Labour Theory of Property, Hegel's Personality Theory of Property, Marxian Theory on Private Property and IP, Indian Theory on Private Property, Constitutional Aspects of Property, Constitutional Protection of Property and IP, International Scenario, Introduction to the leading international instruments concerning intellectual property rights: the Berne Convention, Universal Copyright Convention, the Paris Convention, TRIPS, the World Intellectual Property Rights Organization (WIPO) and the UNESCO, Economic Development and IPR Protection

LBL412 - Civil Procedure Code**4 Credits (4-1-0)**

Concepts: Affidavit, order, judgment, decree, plaint, restitution, execution, decree-holder, judgment-debtor, mesne profits, written statement, Distinction between decree and judgment and between decree and order, Jurisdiction - Kinds, Hierarchy of courts, Suit of civil nature - scope and limits, Res-subjudice and Resjudicata, Foreign judgment - enforcement, Place of suing, Institution of suit, Parties to suit: joinder, mis-joinder or non-joinder of parties: representative suit, Alternative disputes resolution (ADR), Pleadings - Rules of pleading, signing and verification, Alternative pleadings, Construction of pleadings, Plaint : particulars, Admission, return and rejection Written statement: particulars, rules of evidence, Set off and counter claim : distinction Discovery, inspection and production of documents, Interrogatories, Privileged documents, Affidavits, Appearance, examination and trial, Ex-parte

procedure, summary and attendance of witnesses, Trial, Adjournments, Interim orders: commission, arrest or attachment before judgment, injunction and appointment of receiver, Interests and costs, General principles; Power for execution of decrees, Procedure for execution . Enforcement, arrest and detection, Appeals, Transfer of cases, Inherent powers of courts, Law reform: Law Commission on Civil Procedure.

LBL413 - Administrative Law

4 Credits (4-1-0)

Evolution and Scope of Administrative Law: Nature, Scope and Development of Administrative Law, Rule of law and Administrative Law, Separation of powers and its relevance, Relationship between Constitutional law and Administrative Law, Administrative Law vis-à-vis privatization, Classification of functions of Administration, Need for devolution of adjudicatory authority on administration, Administrative Tribunals- Constitution, powers, procedures, rules of evidence, Principles of Natural Justice - Rule against bias, Audi Alteram, Essentials of hearing process, Cross examination, Legal representation - right to counsel, Pre and post - decisional hearing, Reasoned decisions, Exceptions to Principle of Natural Justice, Effect of failure - Rules of evidence - no evidence, some evidence and substantial evidence, Institutional Decisions, Administrative Discretion and Judicial Control of Administrative Action Doctrine of legitimate expectations, Doctrine of Proportionality, Public Accountability, Judicial Control of Administrative Action: Introduction, Court as the final authority to determine the legality of administrative action, Exhaustion of Administrative remedies, Locus standi, Res judicata, Judicial review and its extent, Statutory appeals, Writs - Habeas Corpus, Mandamus, Certiorari, Prohibition and Quo warranto, Declaratory judgments and injunctions, Civil Suits for Compensation : Concept and need, Lokpal and Lokayukta.

LBL 414- MEDIATION & CONCILIATION, AND ARBITRATION

The course would equip students with the latest rules on mediation and conciliation. The course would encompass the necessary skills for being a mediator. A few aspects of arbitration would be studied.

LBL415 - CoMPANY LAW (3 Y)

4 Credits (4-1-0)

Meaning of Corporation, Theories of corporate personality, Creation and extinction of corporations, Forms of Corporate and Non-Corporate Organizations, Corporations, partnerships and other associations of

persons, state corporations, government companies, small scale, co-operative, corporate and joint sectors, Law relating to companies - public and private - Companies Act, 1956, Need of company for development formation of a company registration and corporation, Memorandum of association - various clauses - alteration therein -doctrine of ultra vires, Articles of association - binding force - alteration - its relation with memorandum of association - doctrine of constructive notice and indoor management - exception, Prospectus - issue - contents - liability for misstatements - statement in lieu of prospectus. Promoters - position - duties and liabilities, shares - general principles of allotment statutory restrictions - share certificate its objects and effects - transfer of shares - restrictions on transfer - procedure for transfer - refusal of transfer- role of public finance institutions - relationship between transferor and transferee - issue of shares at premium and discount - depository receipts - dematerialized shares(DEMAT), Shareholder - who can be and who cannot be a shareholder - modes of becoming a shareholder - calls on shares - forfeiture and surrender of shares - lien on shares. Share capital - kinds - alteration and reduction of share capital - further issue of capital - conversion of loans and debentures into capital - duties of courts to protect the interests of creditors and shareholders, Directors - position - appointment - qualifications - vacation of office - removal - resignation - powers and duties of directors - meeting, registers, loans - remuneration of directors - role of nominee directors - compensation for loss of office - managing directors - compensation for loss of office - managing directors and other managerial personnel, Meetings - kinds - procedure - voting, Dividends - payment - capitalization - profit, Audit and accounts, Borrowing powers - powers - effect of unauthorized borrowing - charges and mortgages - loans to other companies - investments - contracts by companies, Debentures - meaning - fixed and floating charge - kinds of debentures - shareholder and debenture holder - remedies of debenture holders, Protection of minority rights, Protection of oppression and mismanagement - who can apply? - Powers of the company, court and of the central government Investigation - powers and functions.

LBL416 - Property Law (3 Y)

4 Credits (4-1-0)

Concept of Property, Ownership and Possession, Meaning of Property under the Transfer of Property Act, Kinds of Property - Jura in re propria - Jura in re aliena - Movable, Immovable, Intangible; Theories of Property - Economic and social theories - doctrine of Eminent Domain ; Right to property under the Constitution of India, General Principles of Transfer of Property Rule against perpetuity; Conditional and Contingent Transfer by non-owners and

Co-owners; Transfer under lis pendens; Fraudulent Transfer; Principle of Part Performance, Sale- definition, Agreement to Sale - Rights and Liabilities of the Buyer and the seller; Marshalling by subsequent purchaser; Discharge of encumbrances; Exchange - definition and mode; Exchange vis-a-vis Sale, Rights and liabilities of the parties; Gift - definition and mode of transfer, suspension and revocation, Onerous gift, universal donee; Transfer of Actionable Claims, Mortgage - meaning and purpose Rights and obligations of the mortgagor and mortgagee; Foreclosure, Deemed Foreclosure, Power of Sale, Priority right determination; Marshalling and Contribution, Redemption; Subrogation, Charge - Fixed and Floating charge; rights and obligations of the parties, Lease, Lien, Registration of Transfer Documents Easement & Prescription.

LBL417 - Law of Evidence (3 Y)

4 Credits (4-1-0)

The main features of the Indian Evidence Act 1861, Other acts which deal with evidence (special reference to CPC, CrPC), Administrative Tribunals, Industrial Tribunals, Commissions of Enquiry, Court-martial, Disciplinary authorities in educational institutions, Evidence : oral and documentary, Circumstantial evidence and direct evidence, Presumption "Proving", "not proving" and "disproving" , Witness, Appreciation of evidence, The Doctrine of res gestae, Evidence of common intention, The problems of relevancy of "Otherwise" irrelevant facts, Relevant facts for proof of custom, Admissions and confessions, General principles concerning admission, Differences between "admission" and "confession", The problems of non-admissibility of confessions caused by "any inducement, threat or promise, Inadmissibility of confession made before a police, admissibility of custodial confessions, Admissibility of "information" received from accused person in custody; with special reference to the problem of discovery based on "joint statement" ,Confession by co-accused, Dying Declarations, "Fraud" and "Collusion" , Expert Testimony Who is an expert? : types of expert evidence , Oral and Documentary Evidence, General principles concerning oral evidence, Issue estoppel, Tenancy estoppel, Witnesses, Examination and Cross Examination, Competency to testify State privilege, General principles of examination and cross examination, Leading questions, Hostile witness, Estoppel, res judicata , presumption Equitable and promissory estoppel, Questions of corroboration.

LBL418- Civil Procedure Code (3 Y)

4 Credits (4-1-0)

Concepts: Affidavit, order, judgment, decree, plaint, restitution, execution, decree-holder, judgment-debtor, mesne profits, written statement, Distinction between

decree and judgment and between decree and order, Jurisdiction - Kinds, Hierarchy of courts, Suit of civil nature - scope and limits, Res-subjudice and Resjudicata, Foreign judgment - enforcement, Place of suing, Institution of suit, Parties to suit: joinder, mis-joinder or non-joinder of parties: representative suit, Alternative disputes resolution (ADR),Pleadings - Rules of pleading, signing and verification, Alternative pleadings, Construction of pleadings, Plaint : particulars, Admission, return and rejection Written statement: particulars, rules of evidence, Set off and counter claim : distinction Discovery, inspection and production of documents, Interrogatories, Privileged documents, Affidavits, Appearance, examination and trial, Ex-parte procedure, summary and attendance of witnesses, Trial, Adjournments, Interim orders: commission, arrest or attachment before judgment, injunction and appointment of receiver, Interests and costs, General principles; Power for execution of decrees, Procedure for execution . Enforcement, arrest and detection, Appeals, Transfer of cases', Inherent powers of courts, Law reform: Law Commission on Civil Procedure.

LBL419 - Constitutional Law - I (3 Y)

4 Credits (4-1-0)

The purpose of the course is to acquaint the students with the Basic Postulates of the Constitution and to give them a picture of Constitutional Parameters regarding the rights and duties accorded to the citizens of India and the corresponding responsibilities of the Government to ensure social welfare. New dimensions of the fundamental rights, their emergence and relevance with the directive principles has been discussed. A citizen's accessibility to justice through their power of filing a writ for the violation of a fundamental right is focused upon with the enhancing diameter of judicial approach towards their basic duty. A critical analysis of the significant judicial decisions is offered to highlight judicial restraint, judicial passivity, judicial activism and judicial balancing.

LBL422 - Constitutional Law - II (3 Y)

4 Credits (4-1-0)

Nature of Federalism in India, Forms of Government: Presidential vis-à-vis Parliamentary form of governance, Division of power: Between Center, State and Local bodies; Between Legislature, Executive and Judiciary; Principles that developed in division of power and check and balances; Sharing of powers; Judicial review, Election of President and Vice President, term of office, qualification and eligibility, Impeachment, Oath of office Constitutional provision on formation of Council of Ministers - advisory function, Collective responsibility - Confidentiality of Cabinet Decisions - Other provisions

- Duties of PM, Composition of the House of States and House of the People, Duration, Qualification and disqualification of members, Office of Profit Nature of Indian Judicial System with its distinctive feature, Supreme Court of India, its various powers, Judicial Appointment,, Special Leave appeals, Officers of S.C.I., Governor of a state, Qualification, Appointment, term, Executive & legislative power and function; Council of Ministers Judicial system in the States, Appointment and conditions of office, Various Powers, Establishment of Common High Court, Constitution of Bench, Transfer of a judge, Emergency power Election Commission, Finance Commission, Comptroller and Auditor General, Attorney General of India, Public Service Commission, National Commission for SC and ST, Inter-state River Dispute Resolution Tribunals, Central and State Service Tribunals.

LBL423 - PUBLIC International Law (3 Y)

4 Credits (4-1-0)

Sources and scope, History, Conflicts between public international law and national sovereignty, Interpretation, State Responsibility, International organizations, league of Nations, UN and regional bodies, Enforcement: by states and by international bodies, International legal theory: Natural law, Grotian school, and Legal positivism, Branches of public international law: Consular law, Diplomatic law, International aviation law, International criminal law, International environmental law, International human rights law, International humanitarian law, International space law, International trade law, Law of state responsibility, Use of force; Introduction to certain contemporary issues: Comparative Corporate Capitalism, European Union Law, Foreign Affairs and the Constitution, Law and Terrorism: Theoretical and Comparative Perspectives, Law, Economics and Politics of International Trade, Transitional Justice

LBL424 - Administrative Law (3 Y)

4 Credits (4-1-0)

Evolution and Scope of Administrative Law: Nature, Scope and Development of Administrative Law, Rule of law and Administrative Law, Separation of powers and its relevance, Relationship between Constitutional law and Administrative Law, Administrative Law vis-à-vis privatization, Classification of functions of Administration, Need for devolution of adjudicatory authority on administration, Administrative Tribunals- Constitution, powers, procedures, rules of evidence, Principles of Natural Justice - Rule against bias, Audi Alteram, Essentials of hearing process, Cross examination, Legal representation - right to counsel, Pre and post - decisional hearing, Reasoned decisions, Exceptions to Principle of Natural Justice, Effect of failure - Rules of

evidence - no evidence, some evidence and substantial evidence, Institutional Decisions, Administrative Discretion and Judicial Control of Administrative Action Doctrine of legitimate expectations, Doctrine of Proportionality, Public Accountability, Judicial Control of Administrative Action: Introduction, Court as the final authority to determine the legality of administrative action, Exhaustion of Administrative remedies, Locus standi, Res judicata, Judicial review and its extent, Statutory appeals, Writs - Habeas Corpus, Mandamus, Certiorari, Prohibition and Quo warranto, Declaratory judgments and injunctions, Civil Suits for Compensation : Concept and need, Lokpal and Lokayukta.

LBL425 - Interpretation of Statutes (3 Y)

4 Credits (4-1-0)

Legislation and its types, Principles of Legislation, Methods of Legislation, Statute and its types- Parts of Statute, Commencement, extent and duration of Statutes, Repeal and revival of Statutes, Amending, consolidating and codifying Statutes- General principles of statutory interpretation, Primary or literal rule of interpretation, Mischief rule, Golden rule, Treatment of general words- Beneficial construction, Strict or liberal construction, Internal Aids to interpretation of Statutes, External Aids to interpretation of Statutes

LBL 426 HUMAN RIGHTS LAW & PRACTICE (3 Y)

4 Credits (4-1-0)

Universal Declaration of Human Rights-International Covenant on Civil and Political Rights and Economic Social and Cultural Rights along with its contextualization in India- vulnerability of certain groups-women rights-child rights-rights of senior citizens- issue of human trafficking-the interface between law and technology-Human Rights in the context of India.

LBL429: LAW OF BANKRUPTCY AND INSOLVENCY

4 Credits (4-1-0)

The importance of law of bankruptcy and insolvency has increased due to increase in number of companies having stressed assets and going into insolvency and liquidation. It has become imperative to understand the framework and procedure provided under the Insolvency and Bankruptcy Code, 2016 for the Corporate Insolvency Resolution Process (CIRP). This course is designed to broaden the horizons of the students on insolvency and bankruptcy law with detailed concepts and includes the challenges faced, litigations piled up,

comparative analysis, recent changes, case law, etc. It aims to discuss clear, coherent and speedy process for early identification of financial distress and resolution. The course also intends to include many niche aspects of insolvency law and further the scope of advanced studies and research in Insolvency and Bankruptcy law

LBL441- INDIAN FEDERALISM

4 Credits (4-1-0)

Constitutionalism, what is Constitutionalism? What is Constitution? Modern Constitutionalism, Constitutionalism in USA, UK, Canada and India, Federalism, what is a federal government? Difference between confederation and Federation, Condition requisite for federalism, Patterns of Federal Government – USA, Australia, Canada and India, Federalism, what is a federal government? Difference between confederation and Federation, Condition requisite for federalism, Patterns of Federal Government – USA, Australia, Canada and India, Legislative Relations, Territorial Jurisdictions, Distribution of Legislature powers, Principles of Interpretations, Repugnancy, Residuary Power, Parliamentary Legislation in the State field, Distributions of powering other Federations, Canada, USA, Australia

LBL442 - COMPARATIVE CONSTITUTION

4 Credits (4-1-0)

Concept of representative and responsible government, Constitutional Conventions; Nature, Scope and Role of Conventions; Presidential, Semi-Presidential, Collegiate system of Governments- Concept of Cabinet government, Mode of appointment of Prime Minister, Collective and Individual Responsibility; Hung Parliament. Treaty making power, Power to implement treaties, External affairs powers; Emergency power, War power- Martial Law, Nature and Significance of Legislative power, composition of Legislature, First and Second Chamber, Powers and Immunities of Legislatures, Chief Executive, his powers and functions- Organization and Jurisdiction of the Higher Judiciary; Independence of Judiciary, Judicial Review and accountability.

LBL443- GENDER JUSTICE AND FEMINIST JURISPRUDENCE

4 Credits (4-1-0)

What is Gender justice, Notions of sex and gender, Deconstructing 'Man', 'Woman', 'Other', Private-public dichotomy, Women in ancient, medieval and modern India: An overview, Current status of women:-Indicators of status: Difference in - likelihood of survival; female foeticide, assigned human worth; and control over

property, valued goods and services, working conditions, knowledge and information, political processes, symbolic representation, one's body, daily lifestyles, reproductive processes, Gender Justice in India: An overview, Understanding Patriarchy, Issues and contradictions in feminism, Sameness and difference debate, Liberal feminism, Radical feminism, Socialist/Marxist feminist approaches

LBL444- JUDICIAL PROCESS AND INDEPENDENCE OF JUDICIARY

4 Credits (4-1-0)

Judicial process and creativity in law, common law model, growth of law, change and stability, The Concept of Judicial Review – Origin and Its Democratic Legitimacy, The tools and techniques of judicial review and judicial creativity, Analysis of the doctrine of Stare Decisis in India, WRITS: Habeas Corpus, Mandamus, Certiorari, Prohibition, Quo warranto, Exclusion of Judicial Review, Judicial Review of Legislation, Judicial Review of Administrative Actions, Grounds, Limits on Judicial Review, Doctrine of Political Questions, Judicially Manageable Standards, Policy Matters, Is Judicial Review the same as Judicial Activism? Judicial Activism and Creativity of the Indian Supreme Court; the new dimensions, Institutional liability of Courts and Judicial activism – Scope and Limits, Evolution of the Doctrine of Basic Structure, The Recent Developments: The “essence of rights” test and “rights test” to determine, Basic structure

LBL445- ADVANCED CONTRACT DRAFTING

4 Credits (4-1-0)

Doing Business in India (Domestic Options), Sole Proprietorship, HUF, Partnership, LLPs, Companies, Doing Business in India (Entry Options), Overview of Foreign Direct Investment in India, Doing Business in the US, Various domestic forms of doing business and entry options, Doing Business in Mauritius, DTAA between India and Mauritius, Basic Issues regarding drafting, Common Drafting Errors, use of short sentences, Use of Active Words, Format, Ambiguity

LBL446- BUSINESS FORMATION

4 Credits (4-1-0)

Doing Business in India (Domestic Options), Sole Proprietorship, HUF, Partnership, LLPs, Companies, Doing Business in India (Entry Options), Overview of Foreign Direct Investment in India, Doing Business in the US, Various domestic forms of doing business and entry options, Doing Business in Mauritius, DTAA between India and Mauritius, Basic Issues regarding drafting,

Common Drafting Errors, use of short sentences, Use of Active Words, Format, Ambiguity

LBL447- PRACTICE OF CORPORATE LAW

4 Credits (4-1-0)

Structures, commonly used structures for mergers, demerges, amalgamations, asset purchase and share purchase, Law relating to M&A, Companies Act, 1956/2013 and IT Act provisions relating to mergers, asset purchase and share purchase and case laws, Takeover Code, Various regulations of the Takeover Code, 2011 and case laws, Confidentiality Agreements, Relevance and contents of confidentiality agreements

LBL448- MARKETING REGULATION IN INDIA

4 Credits (4-1-0)

Introduction to Financial System, Regulatory Framework: General View, Introduction to Compliance, SEBI Act, 1992, Securities Contracts (Regulation) Act, 1956 and Securities Contracts (Regulation) Rules, 1957, SEBI (Intermediaries) Regulations, 2008, SEBI (Prohibition of Insider Trading) Regulations, 1992, SEBI (Fraudulent and Unfair Trade Practices Relating to Securities Markets) Regulations, 2003, The Prevention of Money Laundering Act, 2002, SEBI (KYC Registration Agency) Regulations, 2011, Understanding Intermediary Specific Regulations, SEBI (Stock Brokers and Sub-Brokers) Regulations, 1992, SEBI (Merchant Bankers) Regulations, 1992, Listing Agreement & SEBI (Delisting of Securities) Guidelines, 2003, SEBI Takeover Code & SEBI (Buyback of Securities) Regulations, 2006, SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2009, Depositories Act, 1996, SEBI (Depositories and Participants

LBL461- INSURANCE LAW

4 Credits (4-1-0)

Understanding and Managing Risk, Risk Management, Perils, Nature, Risk Analysis, Planning, Control, Mechanism for Transfer of risk, Insurance and Reinsurance, General Principles and Concepts of Insurance, Insurable Interest, Indemnity, Uberrimae fidei, Proximate Cause, Subrogation and Contribution, Differentiation Insurance and Guarantee, Insurance and Wager, Disclosure, Moral Hazards, Insurance Contract and Indian Market Conditions, Nature of Insurance Contract, Features of Insurance Contract, Types of Insurance, Concept of Intermediaries, Market Players and their Roles, Agents, Brokers, Surveyors & Loss Assessors, Health, Third Party Administrators, Certification of Insurance Professionals, Training Organizations, Regulatory Environment, Specific Legislations, Regulation of Insurance Business, Insurance

Act, Insurance Regulatory and Development Act, Powers and Functions of IRDA, Relevant Regulations and Guidelines issued by IRDA, Licensing, Audit & Supervision, Investments, Amalgamation and Transfer, Grievance Redressal, Rural and Social Sector obligations, Micro Insurance, Financial inclusion, Product Approval

LBL462- CRIMINAL JUSTICE ADMINISTRATION

4 Credits (4-1-0)

Foundational Aspects- Meaning and Concept of Human Rights- Notion and Classification of Rights : Natural, Moral and Legal Rights, Three Generations of Human Rights (Civil and Political Rights; Economic, Social and Cultural Rights; Collective/Solidarity Rights)-Evolution of the Concept of Human Rights- Journey from Magna Carta to the Universal Declaration of Human Rights (Magna carta; The united States Declaration of Independence; The French Declaration of the Rights of Man and the Citizen; United States Bill of Rights; Geneva Convention of 1864; Universal Declaration of Human Rights, 1948.

LBL463- MEDIA LAW

4 Credits (4-1-0)

Constitutional Provisions: Freedom of speech and expression, Indian Penal Code: Sedition, Promoting enmity between different groups on grounds of religion, race, place, birth, residence, language etc., Defamation, Indecent Representation of Woman (Prohibition) Act, 1986 and Hindu Marriage Act, 1955, Kinds of indecent representation of women through advertisements or in publications, writings, paintings, figures or in any other manner and for matters connected therewith, Legal provisions, Proceedings of Family court, Right to Information Act, 2005: How to use RTI to get information, Prasar Bharti (Broadcasting Corporation of India) Act, 1990: Definitions, Appointment of chairman and other members, Powers and Functions of Executive Members, Power of central government to give directions and obtain information, Information Technology Act, 2000: Definitions, Punishment for sending offensive messages through communication service etc., Broadcast Policy, 2004, Cable TV Regulation Act, 1995, Cinematograph Act, 1952, Self-regulation, issues and legal intervention, Legal provisions, Issues and Amendments, Working Journalists and other Newspaper Employees (conditions of services) and Miscellaneous Provisions Act, 1955, Young Persons (Harmful Publications) Act, 1956, Main provisions and amendments

LBL464- HEALTH LAW**4 Credits (4-1-0)**

Right to Health and Indian Constitution, National Health Policy, Legal aspect of Private medical practice, The Mental Health Act, 1987: Mental Health Authorities, Admission and detention in psychiatric, Hospitals or Psychiatric Nursing Homes, Protection of Human Rights of Mentally ill persons, Medical Termination of Pregnancy Act, 1971, The Transplantation of Human Organs Act, 1994: Authority for the Removal of Human organs, Removal of organs in case of unclaimed bodies in hospital or prison, Restrictions on removal of Human organs, Offences and Penalties, Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994, Medical Negligence and Malpractices, Health Insurance in India, Role of Law in prevention of AIDS, Duties of Hospitals regarding Medico-legal cases.

LBL465- CYBER LAW**4 Credits (4-1-0)**

Information technology has become an indispensable part of economic activities, political functions as well as social interactions. This course introduces the legal complexities involved in the use of information technology (such as digital devices, internet, emerging technologies and associated intellectual property). This course is designed to prepare the students to work in a fast-paced technological environment where business as well governance is highly digitalized. It equips the students with an analysis of the evolving cyber and information security risk landscape using a risk-based approach. The course also facilitates a comparative analysis of the cross-jurisdictional legal and regulatory framework for information technology.

LBL466- TRANSPARENCY AND ACCOUNTABILITY LAWS**4 Credits (4-1-0)**

Accountability is the cornerstone of good public governance. In recent years, the principles of accountability, transparency, participation, and inclusion have become recurring features of policy statements and programmes of international development organizations. In a country like India which is proud of its democratic values, observance of these principles by the public offices holds utmost significance. This course is designed to introduce students to these aspects and help them in promoting them in the governance setup.

LBL511- Law of Taxation**4 Credits (4-1-0)**

History of tax law in India - Fundamental principles relating to tax laws - Governmental financial policy, tax structure and their role in the national economy - Concept of tax - Nature and characteristics of taxes - Distinction between Tax and Fee - Tax and Cess - Direct and indirect taxes - Tax evasion and tax avoidance - Scope of taxing powers of Parliament, state Legislature and local bodies - Income Tax - Basic Concepts: Income - Total income - Income not included in total income - Deemed income - Clubbing of income - Assessee - Person - Tax Planning - Chargeable income - Heads of income - Salaries - Income from house property - Income from business or profession - Capital gains - Income from other sources - Deductions, relief and exemptions - Rate of income tax - Income Tax Authorities: Power and functions - Offences and penal sanctions: Settlement of grievances: Authorities, powers and functions - Wealth Tax - Taxable wealth, determination of value of assets, exemptions and rate of wealth tax - Wealth tax authorities - Offences and penalties - Central Sales Tax and or State Sales Tax - . Meaning of sale - Sale in the course of inter-state trade and commerce - Sale to take place outside a state - Sale in the course of export or import - Charge of tax Exemption and rebate - Sales tax authorities - Offences and penalties - Service Tax - Taxable service - Meaning and importance of service tax - Constitutional perspective - Salient provisions of the service tax law - Valuation of taxable service Offences and penalties..

LBL513 - LABOUR Law I (3 Y)**4 Credits (4-1-0)**

Historical perspectives on Labour, labour through the ages - slave labour - guild system - division on caste basis -labour during feudal days, Colonial labour law and policy, Labour capital conflicts: exploitation of labour, profit motive, poor bargaining power, poor working conditions, unorganised labour, bonded labour, surplus labour, division of labour and super-specialisation - lack of alternative employment, Theories of labour and surplus value' From laissez faire to welfarism and to globalisation: transition from exploitation to protection and from contract to status : changing perspectives on labour, Trade unionism, Labour movement as a counter measure to exploitation - history of trade union movement in India, Right to trade union as part of human right to freedom of association , Collective bargaining - The concept, International norms - conditions precedent - merits and demerits, Techniques of pressurization : strike and lockout, go-slow, work to rule, gherao, bundh, State prescription of machinery: reference for adjudication, the adjudicatory mechanisms, Unfair labour practices, Discipline in industry, Doctrine of hire and fire - history

of management's prerogative., Fairness in disciplinary process, Punishment for misconduct - meaning of misconduct, The right to know : the charge sheet, The right to defend : domestic enquiry, notice, evidence, cross-examination, representation, unbiased inquiry officer and reasoned decision, Prenatal (permission) and postnatal (approval) control during pendency of proceedings, Role of management and labour, Remuneration for Labour.

LBL514 - Labour LAW – II (3 Y)

4 Credits (4-1-0)

Theories of wages : marginal productivity, subsistence, wages fund, supply, Concepts of wages (minimum wages, fair wages, living wages, need-based minimum , Components of wages : dearness allowance, principle of fixation, Disparity in wages in different sectors - need for nationalization and national approach, Wage determining process - modes and modalities, Unilateral fixation by employer, Bilateral fixation, Conciliation, arbitration and adjudication, Wage Board and Pay Commission, Principles of wage fixation, concept of bonus - computation of bonus, Protection of wages : non-payment, delayed payment, unauthorized deductions - remedial measures, Health and Safety, Obligations for health and safety of workmen - legislative controls : factory, mines and plantations. Employer's liability: Workmen's compensation, Employee's State Insurance, Liability for hazardous and inherently dangerous industries - environmental protection, Labour Welfare, Welfare provided by the employers and through bipartite agreements and by statutory prescription, Provident fund and family pension, Gratuity, Insurance, Inter-state migrant workmen - regulation of employment and conditions of service, Employment of young persons : prohibition of employment of children, regulation of employment of young persons, Woman and labour force, Equal remuneration law, maternity benefits, protective provisions for women under factories, plantations and mines laws, Protection of the weaker sectors of labour , Tribal labour : need for regulation, Unorganized labour like domestic servants : problems and perspectives, Bonded labour : socio-economic programmes for rehabilitation, Contract labour - regulation, Daily wage workers.

LBL515- INTELLECTUAL PROPERTY RIGHTS (3 Y)

4 Credits (4-1-0)

Introduction to Intellectual Property, Concept of Intellectual Property, Kinds of Intellectual Property, Economic importance of Intellectual Property, Philosophical Justification of Intellectual Property Western Theories on Private and IP, Locke's Labour Theory of Property, Hegel's Personality Theory of Property, Marxian

Theory on Private Property and IP, Indian Theory on Private Property, Constitutional Aspects of Property, Constitutional Protection of Property and IP, International Scenario, Introduction to the leading international instruments concerning intellectual property rights: the Berne Convention, Universal Copyright Convention, the Paris Convention, TRIPS, the World Intellectual Property Rights Organization (WIPO) and the UNESCO, Economic Development and IPR Protection

LBL516- Law of Taxation (3 Y)

4 Credits (4-1-0)

History of tax law in India - Fundamental principles relating to tax laws - Governmental financial policy, tax structure and their role in the national economy - Concept of tax - Nature and characteristics of taxes - Distinction between Tax and Fee - Tax and Cess - Direct and indirect taxes - Tax evasion and tax avoidance - Scope of taxing powers of Parliament, state Legislature and local bodies - Income Tax - Basic Concepts: Income - Total income - Income not included in total income - Deemed income - Clubbing of income - Assessee - Person - Tax Planning - Chargeable income - Heads of income - Salaries - Income from house property - Income from business or profession - Capital gains - Income from other sources - Deductions, relief and exemptions - Rate of income tax - Income Tax Authorities: Power and functions - Offences and penal sanctions: Settlement of grievances: Authorities, powers and functions - Wealth Tax - Taxable wealth, determination of value of assets, exemptions and rate of wealth tax - Wealth tax authorities - Offences and penalties - Central Sales Tax and or State Sales Tax - . Meaning of sale - Sale in the course of inter-state trade and commerce - Sale to take place outside a state - Sale in the course of export or import - Charge of tax Exemption and rebate - Sales tax authorities - Offences and penalties - Service Tax - Taxable service - Meaning and importance of service tax - Constitutional perspective - Salient provisions of the service tax law - Valuation of taxable service Offences and penalties.

LBL518 - MEDIATION & CONCILIATION, AND ARBITRATION (3Y)

4 Credits (4-1-0)

The course would equip students with the latest rules on mediation and conciliation. The course would encompass the necessary skills for being a mediator. A few aspects of arbitration would be studied.

LBL541- PATENT LAW**4 Credits (4-1-0)**

This course delves into the fundamental rules and regulations governing patent law, beginning with general discussions on patents and the patenting process. Students will explore the background and evolution of the current Indian patent law, including an in-depth examination of the WTO-TRIPS Agreement, its institutional framework, and its various functions. The curriculum also covers pertinent national and international case laws, addressing general issues and notable decisions in the realm of international trade. By the end of the course, students will have a comprehensive understanding of both the theoretical and practical aspects of patent law.

LBL542- COPYRIGHT AND NEIGHBOURING RIGHTS**4 Credits (4-1-0)**

Nature and Justification of Copyright, Subject matter of copyright, Authorship and ownership in copyright, Copyright and issues in Digital world, economic rights of author, moral rights of author, Doctrine of Fair Dealing: National and International Perspectives, National and International Perspectives of Neighboring rights, Ideology of Neighboring Rights/Related rights, Performers Rights, Broadcasting organizations and Producer of phonogram.

LBL543- TRADEMARK & DESIGN**4 Credits (4-1-0)**

Genesis and development, functions, objectives, types, Definition of Trademark, Mark, essentials of trademark, Different kinds of trademark, Registration of trademarks, Registration of trademark and its effects, Procedure for registration, Grounds of refusal: Absolute and Relative, Well Known Trademarks, Assignment and licensing, Intellectual property Appellate Board, Issues and Infringement, Trademark issues in digital world, Unconventional trademarks: sound, smell, taste, Passing off: concept, essentials, modern formulation with special emphasis on domain name, trade dress, Infringement of registered trade name, Introduction to Design law, Definitions, registration and Procedure for Design, Cancellation of registration of Design, Piracy of registered Design and remedies, Overlapping between Design copyright and trademark.

LBL544- GEOGRAPHICAL INDICATIONS AND OTHER RELATED LAWS**4 Credits (4-1-0)**

Intellectual Property is a powerful commercial asset whose commercialization is yet to be fully developed in India. Though, Indian Law has travelled a very long way in providing protection to different kinds of Intellectual Property creations; the condition and circumstances of gaining protection and commercializing these rights remain vulnerable. The course is designed to introduce fundamental aspects of GI to students who are going to play a major role in development and management of innovative projects in industries and to know the legal position relating to geographical indications of goods in India. It will also include various international treaties, conventions and agreements relating to GI. The basic objective of this course is to introduce the students with the Designs Act, The Semiconductor Integrated Circuits Layout-Design Act and the Geographical Indication of Goods (Registration and Protection) Act and emerging issues and related concepts therein.

LBL545- INTERNATIONAL ORGANIZATION**4 Credits (4-1-0)**

The primary duty of international organization is not only to maintain international peace but also to promote mutual co-operation among the society of nations for the welfare of human beings. The course will highlight the origin, function, socio-economic and political role of these international organizations in reshaping the life of people and restructuring socio-economic life of country. The study will provide a platform to students for in-depth analysis of international organizations. The course examines mostly formal, intergovernmental organizations, but also spends some time on informal institutions, or regimes. We ask the following questions: how are institutions established? What makes them change over time? What impact (if any) do they have? How do they influence government policies? How do they operate? How do they structure decision-making? How do international organizations affect domestic politics? The course will begin by focusing on different theoretical perspectives on these questions and continue by examining international organizations in specific issue areas.

LBL546- INTERNATIONAL HUMANITARIAN LAW**4 Credits (4-1-0)**

Introduction to International Humanitarian Law (IHL), History and Development of IHL, Application of IHL, IHL and Human Rights, General Limitations on the Means and Methods of Warfare, Specific Weapons Regime, The Principle Of Distinction, Rule Of Military Necessity

and Rule Of Proportionality, Prohibition Of Direct And Indiscriminate Attacks, Protected Persons And Property, Wounded, The Sick, The Shipwrecked, Prisoners Of War, Medical, Religious And Relief Personnel, Protection Of Civilians, Protection of Women, Protection of Children, Protection of Refugees and Internally displaced Persons, Protection Of Cultural Property, Implementation Of IHL

LBL547- INTERNATIONAL ENVIRONMENTAL LAW

4 Credits (4-1-0)

Historical Evolution, Developed and Developing Countries Perspectives, Stockholm, Rio and Johannesburg, Sources: Treaties, Custom, General Principles of Law, Other Sources, Principles:

Sovereignty over Natural Resources, Obligation Not to Cause Damage, Principles of Preventive Action and Precaution, Polluter Pays Principle and Equitable Sharing of Cost, Sustainable Development, Equitable Utilization, Common but Differentiated Responsibilities, The Link Between Environment and Development, Desertification as a Transnational Problem; Tropical Deforestation; The 1994, Desertification Convention, Transboundary River Pollution; Transboundary Groundwater Pollution, Transboundary Shipments of Hazardous Wastes; The Basel Convention Regime, Trans frontier Air Pollution and Convention on Transboundary Air Pollution, Environmental Warfare, State Liability: Theoretical Issues, Victim State Sovereignty Threshold Of Cognizable Injury

LBL548- REFUGEES, IDPS & STATELESS PERSONS

4 Credits (4-1-0)

Introduction to international refugee law, Development of the legal protection of the refugees, 1951 Convention relating to the status of refugees & 1967 Protocol relating to status of refugees, Voluntary repatriation, local integration and resettlement in a third country, Regional laws and standards, International Protection of refugees under the UNHCR and other organizations, UNHCR Executive Committee Conclusions, UNHCR and India, UNRWA, Protection of Refugees in India, Partition refugees and Bangladesh experience, Foreigners' law regime in dealing with refugees, Role of the Judiciary in refugee protection in India, Model National Law on Refugees, Internally Displaced Persons (IDPs), Wrongs to Person: Guiding Principles on Internal Displacement 1991, UNHCR ExCom and Standing Committee, Special Rapporteur on the Human Rights of Internally Displaced Persons, Protection and Assistance, Stateless Persons, 1954 Convention relating to the Status of Stateless Persons, 1961 Convention on the Reduction of Statelessness, Other Legal Documents Related to

Statelessness, Global Action Plan to End Statelessness principle.

LBL549- PRIVATE INTERNATIONAL LAW

4 Credits (4-1-0)

The course provides the students with the study of the basic principles governing conflict of laws. The course offers a practical and legal background to the nature and function of the Conflict of Laws. The various rules and regulations of dispute resolution are discussed to enable students to apply these principles in various situations in a proficient manner. The applicability of international law in family matters constitutes an important part of the curriculum.

LBL550- INTERNATIONAL HUMAN RIGHTS LAW

4 Credits (4-1-0)

The course aims to provide the students with the study of the basic principles governing the international human rights law. The purpose and the underlying aim behind the human rights regime forms a key component of the course. The course aims to equip the students with the pertinence of Universal Declaration of Human Rights, International Covenant on Civil and Political Rights and Economic, Social and Cultural Rights along with its contextualization in India. The aspects of vulnerability of certain groups also form a key component of the course.

LBL561- CLEAN ENERGY & SUSTAINABILITY LAWS

4 Credits (4-1-0)

Considering the global shift towards unconventional energy sources, India, too, is looking to broaden its non-fossil energy spectrum. However, these changes have projected issues that require policy interventions at various implementation stage. This course focuses on understanding the emerging legal issues related to transition of energy sector with a fulcrum point of sustainability. The 'first of its kind' course in India will develop a strong understanding towards comprehending energy sector and sustainability from legal perspectives. Understand Indian & world energy scenarios and related legal regimes. Interrelate the energy economics with emerging clean energy policies. Apply the concept of sustainability with the energy sector laws in India.

LBL562- SCIENCE, TECHNOLOGY AND LAW**4 Credits (4-1-0)**

Scientific and Technological Researches - Impact on ethics, morality and Human Rights, Development vis-à-vis Human Rights - Conflicts, Confrontation and resolution, Freedom of information, Freedom for Scientific Research, Controls and Constraints, Intellectual Property Rights - International Dimensions, Protection of economic and social rights of indigenous people, Role of judiciary in the dialogue among science, Technology, Human Rights and law, Limitations on the right to information under Information Technology Laws - The approach of the judiciary

LBL563-INTERNATIONAL TRADE LAW**4 Credits (4-1-0)**

WTO and International Trade Law, Multilateral Agreements on Trade in Goods, GATS, TRIPS Agreement, Doha Round and aftermath, Regulation of International Trade in India, Institutional Structure, Foreign trade (Development and Regulation) Act, 1992, Foreign Trade Policy, Foreign Trade Procedures

LBL564- INTERNATIONAL COMMERCIAL ARBITRATION**4 Credits (4-1-0)**

Introduction to Int'l Commercial Arbitration-Dispute resolution in international trade, Concept and nature of arbitration, Important terms used in international commercial arbitration, The hybrid nature of arbitral process, Types of arbitration; Arbitrability- Arbitrability, Comparative study of judicial decisions on arbitrability; Arbitration Agreement- Significance of agreement in arbitration, Forms of arbitration agreement, Functions of an arbitration agreement, Definition and Requirements of a valid arbitrations agreement, Foreign Arbitration Agreement; Arbitration Agreement Cont.; Complex web of laws and rules governing Int'l. Commercial Arbitration- Types of laws applicable in international commercial arbitration, Governing law of arbitration, Law applicable to the substantive issues, Law governing arbitration agreement; Enforcing the choice of law clause; Regulating Int'l Commercial Arbitration- An introduction to UNCITRAL Model law on International Commercial Arbitration; Recognition or enforcement of foreign arbitral awards- The International Conventions for recognition and enforcement of arbitral awards, Reciprocity and commercial reservation, Indian law-scope and applicability, Foreign award- meaning, General policy for review foreign award in India, Grounds for refusal of recognition and enforcement of a foreign award, Recognition and enforcement of annulled awards

LBL565 - ELECTION LAWS**4 Credits (4-1-0)**

India is having a Constitution that guarantees a democratic republic to its citizens. This is based unmistakably on adult franchise, though the question remains about the nature of right to vote whether fundamental or statutory. The introduction of the course will be done on the political structure of democracy and will proceed to the postulate of free and fair elections. The next phase of link up with the Constitution will be a natural progression, which could be achieved by analyzing democracy as a right and the relevance of elections therein. To familiarize the students with the existing legal framework of elections to various democratic bodies/ posts. To develop a critical thinking about the development of this branch of law. The same will be based within the premise of the right to better democratic order, the focus being the election process. To critically analyses the present regime of laws with reference to the postulate of free and fair elections as the fundamental point of democracy. To sketch the probable future developments by studying the report of the National Commission on the Review of the Working of the Constitution and Law Commission of India.

LBL571 - CRIMINOLOGY (3 Y)**4 Credits (4-1-0)**

Crime Data and Crime Measurement, Rational Choice Theory, Anthropological Theory- Mental Deficiency and Crime, Psychological Criminology, Biology and Crime-Moral Development and Crime, Psychopathy, Antisocial Personality Disorder- Poverty and Crime, Social Disorganization Theory- Strain Theory, Learning Theory, Control Theory- Labeling Theory, Conflict Theory, Feminist Theory- Patterns and Trends in Violent Crime, Property Crime Investigation, White Collar Crime Profiles- Theories of Terrorism, Organized Crime Investigation, Crimes against Public Order, Sex Offenders and Rehabilitation

LBL572- RIGHT TO INFORMATION & ACCOUNTABLE GOVERNANCE (3 Y)**4 Credits (4-1-0)**

Access to information- Extent of legal illiteracy, Need to spread knowledge of laws, Citizens Charter, Accountability Commissions, The Lokpal and Lokayukta Act, 2013, Concept of Lokayukta and Lokpal, Concept of Good Governance, Concept of Ombudsman, Gram Sabha and Accountability, Right to information - Fundamental Right? Official Secrets Act, Government Privilege to withhold Disclosure of Documents, Public Inquiries: Commissions of Inquiry appointed by NGOs, Transparency and Right to Information, Problems of legal accountability, Evolution of Right to Information

in India, RTI and good governance, Salient features of Right to Information Act, Public Authorities and their Obligations under the Act, Accepting an Information Request, Processing and Disposing, Exemptions from Disclosure of Information, Partial Disclosure and "Third Party" Information, Role of Civil Society Organizations and Media, Records Management for Effective Information Management and Implementation of the Act

LBL573 - COMPETITION LAW (3 Y)

4 Credits (4-1-0)

Introduction- Basic economic and legal principles, Restraint of Trade under Indian Contract Act, Monopolistic Trade Practices, Restrictive Trade Practices- Development of law from MRTP to Competition Act 2002, Aims, Objects and Salient features, Comparison between MRTP Act and Competition Act, Anti-Competitive Agreement, Abuse of Dominant Position, Combination, Protection of consumers- Competition Commission Of India, Structure and function of CCI, Regulatory role- Competition Appellate Tribunal. Composition, Functions, Powers and Procedure, Award Compensation, Power to punish for contempt, Execution of orders.

LBL574 - FOOD SECURITY LAWS (3 Y)

4 Credits (4-1-0)

Right to food under the Constitution of India, National Food Security Act, 2013: intent, scope, Authorities under the Act, Concept and meaning of Food quality and food Safety, Food adulteration, food hazards. Natural toxins. Food Laws and Standards in India International Food Control Systems including CODEX Safety aspects of water and beverages such as soft drinks, tea, coffee, cocoa. Safety assessment of food contaminants and pesticide residues. Safety evaluation of heat treatments and related processing techniques. Principles of food laws regarding prevention of food adulteration, Definition, authorities under the act Procedure of taking a sample purchase right, warranties, guest control order or food services order in force from time to time. Essential commodities etc., and AGMARK, Exposure, estimation, toxicological requirements and risk assessment. Industries (Development and Regulation) Act, 1951, Essential Commodities Act, 1955, Seeds Act, 1966, Protection of Plant Varieties and Farmers' Rights Act, 2001, Insecticides Act, 1968

LBL575- PENOLOGY & VICTIMOLOGY (3 Y)

4 Credits (4-1-0)

Penology: Meaning, Definition and Scope, Concept and Necessity of Punishment, Theories of Punishment:

Retributive theory, Deterrent theory, Preventive and Reformatory theory, Capital Punishment - constitutionality of capital punishment, judicial approach towards death penalty, Meaning & Scope of Victimology, Types of Victims of Crime, Rights of the Victims of Crime, Provisions regarding Compensation to the Victims of Crime under Code of Criminal Procedure and Indian Penal Code, Compensation under Probation of Offences Act, Compensation to Victim under Motor Vehicle Act, Common Law regarding Compensation in Tort and Civil Law, Judicial trends in Compensatory Jurisprudence, Recommendations of Justice Malimath Committee with respect to compensation to victims of Crime

LBL576: AFFIRMATIVE ACTION AND DISCRIMINATIVE JUSTICE (3 Y)

4 Credits (4-1-0)

Discrimination has penetrated all societies and at all places without 'reservations'. Phenomenon of discriminations does not discriminate. The Constitutions exhuming constitutionalism have safeguarded the rights of the discriminated and often insular minorities. The lineage of past discrimination is addressed by another set of discriminatory policies known as "affirmative action", "protective discrimination", "positive discrimination", "compensatory discrimination" etc. The Constitution of India, 1950 ("Constitution") was enacted to balance the inequities prevailing in India. In this regard, the Constitution was a social document marked by a transformative vision. There was and still subsists systemic discrimination. The discrimination may be single, double or multi-layered. In a broad brush manner, a few grounds of discrimination are sex, caste, race, religion, sexual orientation, place of birth and, so on and so forth. The Constitution prohibits discrimination per se. When access is denied to public goods, the discrimination assumes an invidious form. But is prohibition on discrimination enough to break the ages old systemic discrimination? Or 'new' forms of discrimination are required to 'reverse' the effects of traditions old discrimination. A contrapuntal arises wouldn't constitutionally sanctioned discrimination violate the equality code of India (Articles 14 to 18)? The answer to these more than simple questions requires agitation of constitutional policy, principles, and judgments which will be undertaken in this course.

LBL577- INTERNATIONAL AIR AND SPACE LAW (3 Y)

4 Credits (4-1-0)

Space Law: Historical Background, Definition and demarcation of outer space, Space technology - Benefits, Shift from air law to space law, Development of the space law - UN contributions, UN General

Assembly Resolutions, Space treaties, Principles - A midway approach; Fundamental Principles, Province of all Mankind, National non-appropriation, Freedom of exploration, use and scientific investigation, Common Heritage of Mankind, Jurisdiction and control, Co-operation between the states, Astronauts - Envoys of Mankind, Liability and Registration, Launching state and Registering state, Liability and responsibility regime under the Outer Space Treaty, Absolute liability and fault liability, COSMOS 954 - A case study, State liability / responsibility for private space activities, Registration and identification, Some Problems of Current Concern, Question of state sovereignty and claim of property rights, Human habitation on the moon and other celestial bodies, Protection of the space environment, Demilitarization of the outer space, International Space Station - Inventions in outer space, System of Financing Outer Space Activities, Increasing private space activities, Asset-Based Financing, UNIDROIT Convention and draft Space Protocol, Creation and registration of international interests in space assets, Default and remedies, Loopholes in the UNIDROIT system, National Space Legislation, Need for national space legislation, Commerce oriented approach - US & Australian models, Other approaches - Russian & UK models, Indian position

LBL578- CORPORATE GOVERNANCE AND CSR (3 Y)

4 Credits (4-1-0)

The aim of this course is to acquaint students with the theory and practice of corporate governance particularly relating to social accountability and reporting. This course examines theories of corporate governance, evaluating the evolution of traditional governance systems to provide incentives to managers in light of increasing demands for accountability, transparency, and social responsibility of managers and business. Issues such as sustainability management accounting/control, reporting, auditing, and verification are also examined and discussed, and the role of drivers such as reporting/governance codes and the investment community in enhancing organizational change toward a sustainable development are critically evaluated. Identify the importance of the theory and practice of corporate governance particularly relating to social accountability and reporting. Critically analyze various provisions regulating different sectors of Corporate. Apply the concept of enforcement of CSR with in the corporate sector.

LBL579- DISASTER, DEVELOPMENT AND HUMAN RIGHTS (3 Y)

4 Credits (4-1-0)

Human rights, civil liberties, global and regional perspectives on human rights, international humanitarian issues, human rights activism, disaster and emergency relief, child and bonded labour issues, apartheid and racial discrimination, refugees and displaced people, drug abuse, role of UNHCR, Amnesty International, Red Cross, PUCL, PUDR, NHRC, other government and non-government organizations on human rights besides other programmes having social, educational, cultural, economic and legal content for the optimum development of a global sustainable society for the protection of Human Rights in disaster effected areas

LBL581- INSURANCE LAW (3 Y)

4 Credits (4-1-0)

Understanding and Managing Risk, Risk Management, Perils, Nature, Risk Analysis, Planning, Control, Mechanism for Transfer of risk, Insurance and Reinsurance, General Principles and Concepts of Insurance, Insurable Interest, Indemnity, Uberrimae fidei, Proximate Cause, Subrogation and Contribution, Differentiation Insurance and Guarantee, Insurance and Wager, Disclosure, Moral Hazards, Insurance Contract and Indian Market Conditions, Nature of Insurance Contract, Features of Insurance Contract, Types of Insurance, Concept of Intermediaries, Market Players and their Roles, Agents, Brokers, Surveyors & Loss Assessors, Health, Third Party Administrators, Certification of Insurance Professionals, Training Organizations, Regulatory Environment, Specific Legislations, Regulation of Insurance Business, Insurance Act, Insurance Regulatory and Development Act, Powers and Functions of IRDA, Relevant Regulations and Guidelines issued by IRDA, Licensing, Audit & Supervision, Investments, Amalgamation and Transfer, Grievance Redressal, Rural and Social Sector obligations, Micro Insurance, Financial inclusion, Product Approval

LBL582- CRIMINAL JUSTICE ADMINISTRATION (3 Y)

4 Credits (4-1-0)

Foundational Aspects- Meaning and Concept of Human Rights- Notion and Classification of Rights : Natural, Moral and Legal Rights, Three Generations of Human Rights (Civil and Political Rights; Economic, Social and Cultural Rights; Collective/Solidarity Rights)-Evolution of the Concept of Human Rights- Journey from Magna Carta to the Universal Declaration of Human Rights (Magna carta; The united States Declaration of Independence; The French Declaration of the Rights of Man and the Citizen; United States Bill of Rights;

Geneva Convention of 1864; Universal Declaration of Human Rights, 1948.

LBL583- MEDIA LAW (3 Y)

4 Credits (4-1-0)

Constitutional Provisions: Freedom of speech and expression, Indian Penal Code: Sedition, Promoting enmity between different groups on grounds of religion, race, place, birth, residence, language etc., Defamation, Indecent Representation of Woman (Prohibition) Act, 1986 and Hindu Marriage Act, 1955, Kinds of indecent representation of women through advertisements or in publications, writings, paintings, figures or in any other manner and for matters connected therewith, Legal provisions, Proceedings of Family court, Right to Information Act, 2005: How to use RTI to get information, Prasar Bharti (Broadcasting Corporation of India) Act, 1990: Definitions, Appointment of chairman and other members, Powers and Functions of Executive Members, Power of central government to give directions and obtain information, Information Technology Act, 2000: Definitions, Punishment for sending offensive messages through communication service etc., Broadcast Policy, 2004, Cable TV Regulation Act, 1995, Cinematograph Act, 1952, Self-regulation, issues and legal intervention, Legal provisions, Issues and Amendments, Working Journalists and other Newspaper Employees (conditions of services) and Miscellaneous Provisions Act, 1955, Young Persons (Harmful Publications) Act, 1956, Main provisions and amendments

LBL584 - HEALTH LAW (3 Y)

4 Credits (4-1-0)

Right to Health and Indian Constitution, National Health Policy, Legal aspect of Private medical practice, The Mental Health Act, 1987: Mental Health Authorities, Admission and detention in psychiatric, Hospitals or Psychiatric Nursing Homes, Protection of Human Rights of Mentally ill persons, Medical Termination of Pregnancy Act, 1971, The Transplantation of Human Organs Act, 1994: Authority for the Removal of Human organs, Removal of organs in case of unclaimed bodies in hospital or prison, Restrictions on removal of Human organs, Offences and Penalties, Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994, Medical Negligence and Malpractices, Health Insurance in India, Role of Law in prevention of AIDS, Duties of Hospitals regarding Medico-legal cases

LBL585- CLEAN ENERGY & SUSTAINABILITY LAWS

4 Credits (4-1-0)

Considering the global shift towards unconventional energy sources, India, too, is looking to broaden its non-fossil energy spectrum. However, these changes have projected issues that require policy interventions at various implementation stage. This course focuses on understanding the emerging legal issues related to transition of energy sector with a fulcrum point of sustainability. The 'first of its kind' course in India will develop a strong understanding towards comprehending energy sector and sustainability from legal perspectives. Understand Indian & world energy scenarios and related legal regimes. Interrelate the energy economics with emerging clean energy policies. Apply the concept of sustainability with the energy sector laws in India.

LBL586- SCIENCE, TECHNOLOGY AND LAW (3 Y)

4 Credits (4-1-0)

Scientific and Technological Researches - Impact on ethics, morality and Human Rights, Development vis-à-vis Human Rights - Conflicts, Confrontation and resolution, Freedom of information, Freedom for Scientific Research, Controls and Constraints, Intellectual Property Rights - International Dimensions, Protection of economic and social rights of indigenous people, Role of judiciary in the dialogue among science, Technology, Human Rights and law, Limitations on the right to information under Information Technology Laws - The approach of the judiciary

LBL587-INTERNATIONAL TRADE LAW (3 Y)

4 Credits (4-1-0)

WTO and International Trade Law, Multilateral Agreements on Trade in Goods, GATS, TRIPS Agreement, Doha Round and aftermath, Regulation of International Trade in India, Institutional Structure, Foreign trade (Development and Regulation) Act, 1992, Foreign Trade Policy, Foreign Trade Procedures

LBL588- INTERNATIONAL COMMERCIAL ARBITRATION (3 Y)

4 Credits (4-1-0)

Introduction to Int'l Commercial Arbitration-Dispute resolution in international trade, Concept and nature of arbitration, Important terms used in international commercial arbitration, The hybrid nature of arbitral process, Types of arbitration; Arbitrability- Arbitrability,

Comparative study of judicial decisions on arbitrability; Arbitration Agreement- Significance of agreement in arbitration, Forms of arbitration agreement, Functions of an arbitration agreement, Definition and Requirements of a valid arbitrations agreement, Foreign Arbitration Agreement; Arbitration Agreement Cont.; Complex web of laws and rules governing Int'l. Commercial Arbitration- Types of laws applicable in international commercial arbitration, Governing law of arbitration, Law applicable to the substantive issues, Law governing arbitration agreement; Enforcing the choice of law clause; Regulating Int'l Commercial Arbitration- An introduction to UNCITRAL Model law on International Commercial Arbitration; Recognition or enforcement of foreign arbitral awards- The International Conventions for recognition and enforcement of arbitral awards, Reciprocity and commercial reservation, Indian law-scope and applicability, Foreign award- meaning, General policy for review foreign award in India, Grounds for refusal of recognition and enforcement of a foreign award, Recognition and enforcement of annulled awards

LBL589 - ELECTION LAWS (3 Y)

4 Credits (4-1-0)

India is having a Constitution that guarantees a democratic republic to its citizens. This is based unmistakably on adult franchise, though the question remains about the nature of right to vote whether fundamental or statutory. The introduction of the course will be done on the political structure of democracy and will proceed to the postulate of free and fair elections. The next phase of link up with the Constitution will be a natural progression, which could be achieved by analyzing democracy as a right and the relevance of elections therein. To familiarize the students with the existing legal framework of elections to various democratic bodies/ posts. To develop a critical thinking about the development of this branch of law. The same will be based within the premise of the right to better democratic order, the focus being the election process. To critically analyses the present regime of laws with reference to the postulate of free and fair elections as the fundamental point of democracy. To sketch the probable future developments by studying the report of the National Commission on the Review of the Working of the Constitution and Law Commission of India

LMD601- DISSERTATION

5 Credits (0-0-10)

To arrive at the objective of the problem after literature survey, to plan the methodology and to predict the probable outputs

LML611 – RESEARCH METHODS AND LEGAL WRITING

3 Credits (2-1-0)

What is Research? Meaning and Objectives; Research methods vis a vis Research Methodology; Legal Research - Meaning, scope and purpose. Relation between law and society; Types/kinds: Doctrinal and Non-Doctrinal (empirical); Applied, fundamental; Library research, field research and laboratory research, analytical, descriptive, conceptual; Participatory and Non-Participatory; Comparative, historical, statistical, critical, socio-legal; Mono disciplinary and trans disciplinary; quasi-disciplinary, inter-disciplinary (multi-disciplinary) research; Quantitative and qualitative, one time and longitudinal, clinical or diagnostic research; Research for legal reform; Research Methods, Research Design, Various Steps in Research: Research Process, Research Problem: Identification and Formulation, Hypothesis, Use of Library, Use of Modern Technology/ Computer Assisted Research, Tools and Techniques for Collection of Data; Analysis and Interpretation of Data, Use of Deductive and Inductive Methods in Research, Preparation of Research Report and Writing of Research report, Budgeting of Research, Ethical and Legal Issues: Plagiarism and Copyright Violation; Legal Writing -Essentials of Good Legal Writing, Structured Legal Writing: Organization of Legal Materials, Framing of Write Up: Research Question, Title, Identifying relevant areas of law, Identifying Literature and Case Laws, Analysis, Discussion, Recommendations and Conclusion; Sources of Authority- Kinds: Informative, Persuasive; Writing for Individual Purposes; Writing for Academic Purpose; Writing for Court Purposes: Briefs, Plaints etc.; Writing for Publication: reviews, articles, books etc., Judicial writing

LML612 – COMPARATIVE PUBLIC LAW

3 Credits (2-1-0)

Public Law - Constitution and Administrative Law, Concept of Constitution, Meaning and Idea of Constitution, Nature and Goals, Living Constitution as Supreme Law; Study of Comparative Constitutional Law, Relevance, Problems and Concerns in Using Comparison; Constitutionalism, Concept, Distinction between Constitution and Constitutionalism, Essential features of Constitutionalism -Written Constitution, Separation of Powers, Fundamental Rights, Independence of Judiciary and Judicial Review; Constitutional foundations of powers, Supremacy of Legislature in Law Making, Rule of law, Dicey's Concept of Rule of Law, Modern Concept of Rule of Law, Social and economic rights as part of rule of law, Separation of powers, Concept of Separation of Powers, Checks and Balances, Separation of Powers or Separation of Functions; Forms of Governments, Federal and Unitary Forms, Features,

Advantages and Disadvantages, Models of Federalism and Concept of Quasi-federalism, Role of Courts in Preserving Federalism, Parliamentary and Presidential Forms of Government, Constitutional Review, Methods of Constitutional Review, Judicial and Political Review, Concentrated and Diffused Review, Anticipatory and Successive Review, Concept and Origin of Judicial Review, Limitations on Judicial Review; Amendment of Constitution, Various Methods of Amendment, Limitations on Amending Power: Comparative Perspective, Theory of Basic Structure: Origin and Development

LML613 – LAW & JUSTICE IN A GLOBALISED WORLD

3 Credits (2-1-0)

Introduction- Meaning and significance of Globalization, Concept of Global Justice, Global Justice and Right to Development; Theoretical Propositions of Global Justice- Realism, Particularism, Nationalism, Cosmopolitanism; Historical and Central Challenges to Global Justice- Global Poverty- Role of International Mechanism, Armed Conflict, Crimes against Humanity, Environment and Health, Oppressive Policies- Threat of Terrorism, Global Politics; Role and Reformation of Global Institutions-

States, sovereignty and Transnational Law, Economic and Trade Institutions-MNC's; Models to Achieve Global Justice- Global Justice and Global Rule of Law

LML641- SEBI RULES AND PRACTICE

3 Credits (2-1-0)

An overview of legal and regulatory framework; Capital market instruments and rating; Capital Market intermediaries; Secondary market institutions; Mutual Funds; Venture Capital; Collective Investments Schemes; Buy-back of securities; Depository Systems; Issue of capital; Resource mobilisation in International capital market; Indian Depository Receipts;

LML642- INTERNATIONAL COMMERCIAL ARBITRATION

3 Credits (2-1-0)

Introduction to Int'l Commercial Arbitration-Dispute resolution in international trade, Concept and nature of arbitration, Important terms used in international commercial arbitration, The hybrid nature of arbitral process, Types of arbitration; Arbitrability- Arbitrability, Comparative study of judicial decisions on arbitrability; Arbitration Agreement- Significance of agreement in arbitration, Forms of arbitration agreement, Functions of an arbitration agreement, Definition and Requirements of a valid arbitrations agreement, Foreign Arbitration

Agreement; Arbitration Agreement Contd; Complex web of laws and rules governing Int'l. Commercial Arbitration- Types of laws applicable in international commercial arbitration, Governing law of arbitration, Law applicable to the substantive issues, Law governing arbitration agreement; Enforcing the choice of law clause; Regulating Int'l Commercial Arbitration- An introduction to UNCITRAL Model law on International Commercial Arbitration; Recognition or enforcement of foreign arbitral awards- The International Conventions for recognition and enforcement of arbitral awards, Reciprocity and commercial reservation, Indian law-scope and applicability, Foreign award- meaning, General policy for review foreign award in India, Grounds for refusal of recognition and enforcement of a foreign award, Recognition and enforcement of annulled awards

LML643- CORPORATE LAW PRACTICE

3 Credits (2-1-0)

Ethics and Governance- Introduction, Ethics, Business Ethics, Corporate Governance, Governance through Inner Consciousness and Sustainability, Failure of Governance and its Consequences; Ethical Principles in Business- Role of Board of Directors, Organization Climate and Structure and Ethics, Addressing Ethical Dilemmas, Code of Ethics; Ethics Committee; Ethics Training; Integrity Pact, Case Studies and Contemporary Developments; Conceptual Framework of Corporate Governance- Introduction, Need and Scope, Evolution of Corporate Governance, Developments in India, Developments in Corporate Governance - A Global Perspective, Elements of Good Corporate Governance; Board Effectiveness - Issues and Challenges, Board Composition; Diversity in Board Room; Types of Directors; Board's Role and Responsibilities; Chairman, CEO, Separation of Roles- Relationship between Directors and Executives, Visionary Leadership, Board Charter, Meetings and Processes, Directors' Training and Development, Performance Evaluation of Board and Directors; Board Committees, Responsibilities, Contribution to Board Governance; Legislative Framework of Corporate Governance in India; Legislative Framework of Corporate Governance - An International Perspective; Risk Management and Internal Control; Corporate Governance and Shareholder Rights; Corporate Governance and Other Stakeholders

LML644- INTERNATIONAL INVESTMENT LAW

3 Credits (2-1-0)

International Investment Laws, Bilateral Investment Treaties, Multilateral Investment Guarantee Agency: Agreement on Trade-Related Investment Measures, Multilateral Agreement on Investment

LML645- INTERNATIONAL TRADE-RULES AND REGULATIONS

3 Credits (2-1-0)

WTO and International Trade Law, Multilateral Agreements on Trade in Goods, GATS, TRIPS Agreement, Doha Round and aftermath, Regulation of International Trade in India, Institutional Structure, Foreign trade (Development and Regulation) Act, 1992, Foreign Trade Policy, Foreign Trade Procedures

LML646- CONTRACT DRAFTING

3 Credits (2-1-0)

Doing Business in India (Domestic Options), Sole Proprietorship, HUF, Partnership, LLPs, Companies, Doing Business in India (Entry Options), Overview of Foreign Direct Investment in India, Doing Business in the US, Various domestic forms of doing business and entry options, Doing Business in Mauritius, DTAA between India and Mauritius, Basic Issues regarding drafting, Common Drafting Errors, use of short sentences, Use of Active Words, Format, Ambiguity

LML647- CORPORATE CYBER LAW

3 Credits (2-1-0)

Information technology has penetrated almost every sphere of life. It has become an indispensable part of economic activities, political functions as well as social interactions. Cyber Law lays out a comprehensive field of study which helps students get an overview of the complexity involved with the use of internet and the legal problems associated with it. This course entrusts students with the understanding of the important laws related to the use of internet and the applicable rules and regulations in India. It also ensures an understanding of the evolving nature of governance, commerce, and intellectual property with the development of information technology. It also prepares the students to understand the evolving cyber and information security risk landscape using a risk-based approach.

LML648- WHITE COLLAR CRIME

3 Credits (2-1-0)

This course focuses on criminality of the privileged classes- wielders of all forms of state and social power. The course focuses on the relation between privilege, power and deviant behaviour. The traditional approaches which highlight white collar crime, Socio-economic offences or crimes of powerful deal mainly deal with the deviance of the economically resourceful. The dimension of deviance associated with the bureaucracy, the new

rich religious leaders and organizations, professional classes are to be addressed. In teaching this course, current developments in deviants reflected in press and media, law reports and legislative proceedings are to be focused.

LML649- COMPETITION LAW

3 Credits (2-1-0)

Competition law, also known as antitrust law in some jurisdictions, is a critical area of legal regulation that aims to promote fair competition and prevent anti-competitive practices in the marketplace. It serves as a cornerstone of modern economic governance, ensuring that markets remain competitive, efficient, and conducive to innovation and consumer welfare. At its core, competition law seeks to safeguard competition by prohibiting agreements, practices, and conduct that restrict competition, abuse market power, or harm consumer interests. Through a combination of statutory provisions, regulatory enforcement, and judicial scrutiny, competition law addresses a wide range of anti-competitive behaviors, including cartels, monopolies, mergers and acquisitions that may substantially lessen competition, and unfair trade practices. In this course on competition law, students will explore the fundamental principles, doctrines, and enforcement mechanisms of competition law, examining key legal concepts such as market definition, abuse of dominance, collusion, and merger control. Through case studies, discussions, and practical exercises, students will develop a comprehensive understanding of how competition law operates in different jurisdictions, its role in regulating specific industries, and its impact on business conduct and consumer welfare.

LML651- CONCEPT AND DEVELOPMENT OF HUMAN RIGHTS

3 Credits (2-1-0)

Protection of Human Rights (HR) became an important issue after the second world war and after the acceptance of the Universal Declaration of Human Rights. The growth of HR Law and jurisprudence thereafter was spontaneous and continuous. The changes in the global scenario bring a new concept of HR protection against violation. In one sense, HR can be said to be the rights which nature has endowed with human beings. However, they are not mere privileges given to the subjects by the ruler but are liberties permitted to the "citizens"; in a democracy. Manifestly a law that violates human rights is no law at all. Probably this perspective may give an impression that human rights are not different from natural rights envisaged by the natural law school. Although Indian polity waited for more than one score and five years for adoption

of Fundamental Duties in the Constitution, it is beyond doubt that every human being has responsibilities and obligation not only towards the other fellow beings, but also towards the society at large. Only when a society is aware of this right-duty relationship can there be any meaning to human rights. This course is intended to highlight the concept of human rights, their evolution and their importance in our society now particularly in the era of privatisation, globalisation and liberalisation..

LML652- INTERNATIONAL HUMAN RIGHTS LAW

3 Credits (2-1-0)

The Concept of Human Rights, Guaranteeing Human Rights by Treaty, UN Mechanisms for Addressing Violations of Human Rights, Regional Human Rights Systems, Human Rights Protections in Extremis, International Criminal Law, Current Issues in Human Rights and Conclusions

LML653- DISASTER MANAGEMENT AND HUMAN RIGHTS

3 Credits (2-1-0)

Human rights, civil liberties, global and regional perspectives on human rights, international humanitarian issues, human rights activism, disaster and emergency relief, child and bonded labour issues, apartheid and racial discrimination, refugees and displaced people, drug abuse, role of UNHCR, Amnesty International, Red Cross, PUCL, PUDR, NHRC, other government and non-government organizations on human rights besides other programmes having social, educational, cultural, economic and legal content for the optimum development of a global sustainable society for the protection of Human Rights in disaster effected areas

LML654- HUMAN RIGHTS LAW AND PRACTICE IN INDIA

3 Credits (2-1-0)

The main objective of the course is to give students grounding in the basics of Human Rights Law and to prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development; to foster respect for international obligations for peace and development; to impart education on national and international regime of Human Rights; to sensitize students to human suffering and promotion of human life with dignity. It includes equipping students in a rudimentary fashion with basic knowledge and tools for human rights lawyering and to expose students to the working of human rights in practice. This course seeks to explore the traditional

areas of international human rights law and also various core international human rights instruments and their monitoring bodies.

LML655-INTERNATIONAL HUMANITARIAN LAW AND REFUGEE LAW

3 Credits (2-1-0)

Origin and Development of Humanitarian Law and Refugee Law; The Geneva Conventions and Protocols; 1951 Refugee Convention; Role of ICRC and UNHCR

LML656- SCIENCE TECHNOLOGY AND HUMAN RIGHTS

3 Credits (2-1-0)

Scientific and Technological Researches - Impact on ethics, morality and Human Rights; Development vis-à-vis Human Rights - Conflicts, Confrontation and resolution; Freedom of information, Freedom for Scientific Research, Controls and Constraints; Intellectual Property Rights - International Dimensions, Protection of economic and social rights of indigenous people; Role of judiciary in the dialogue among science, Technology, Human Rights and law; Limitations on the right to information under Information Technology Laws - The approach of the judiciary

LML661- IPR REGIME AND CYBER WORLD

3 CREDITS (2-1-0)

Introduction to the Cyber World and Cyber Law, Cyber World: An Overview, The internet and online resources, Security of information, Digital signature, An Overview Cyber Law, Introduction about the cyber space, Regulation of cyber space - introducing cyber law, Scope of Cyber laws - e-commerce; online contracts; IPRs (copyright, trademarks, Regulatory Framework, International Legal Regime, International legal regime relating to Intellectual Property Rights - (i) Berne Convention; (ii) Rome Convention; (iii) WIPO Copyright Treaty; (iv) WIPO Performance and Phonograms Treaty; (v) UDRP; (vi) OECD convention on Database protection; Domestic Legal Regime - Cyber Law in India - Information Technology Act, 2000 - Digital Signature; E-Governance; Regulation of Certifying Authorities; Duties of Subscribers; Penalties and Adjudications; Offences under the Act; Making of Rules and Regulations etc.; E-Commerce, Online business, Definition of E-commerce, Types of E-commerce, Important Issues in Global E-commerce, Issues relating to Access (to infrastructure; to contents; universal access; Digital Divide and Universal Divide); Trust, Privacy, Security, Consumer Protection, Content Regulation; Uniformity in Legal Standards pertaining to

internet, Application of conventional territory based law to E-commerce – Taxation, Intellectual Property Rights, International Trade, Commercial law and standards, Dispute resolution; Cyber space and Intellectual Property issues, IPR – An Overview, Copyright Issues in Cyberspace, Trademark Issues in cyberspace – Domain Name Dispute, Cybersquatting, Uniform Dispute Resolution Policy, Meta-tags and Key words, Computer Software and Related IPR Issues

LML662- INTERNATIONAL IP LAW AND POLICY

3 Credits (2-1-0)

Sources of international intellectual property law: International conventions and treaties; decisions of international courts and tribunals; Secondary authorities, International institutions: the World Trade Organization, the World Intellectual Property, Organization, the World Bank, the United Nations Human Rights Commission, the World Health, Role of non-governmental organizations including transnational corporations, trade associations, human rights, and environmental and consumer groups, Global administration of IPRs and the integration of patent and trade mark offices, Evolution and significance of the World Trade Organization Agreement on the Trade-Related Aspects of Intellectual Property Rights (TRIPS), Global implementation of TRIPS in industrialized and transitional economies, Impact of the digital information revolution and economic globalization on the protection of intellectual property, Intellectual property as a trade issue, Development of global civil society, Intellectual property and issues of global public policy, Geographical indications: TRIPS requirements; extended protection for wines and spirits; possible extension to agricultural products and handicrafts, Programme copyright, Digital rights management, self-help measures and unilateral action, Software patents, Trade-secret protection, Database protection, Open-source software, Access to essential medicines in developing countries after the Doha Declaration on TRIPS and Public Health, Famous trademarks, transnational outsourcing, child labour and sweatshop production, Biopiracy, biodiversity and the legal IPR regulation, Convention on Biological Diversity: TRIPS Article 27.3(b); Farmers' rights; Traditional knowledge, Copyright, music and royalty income, Online file-sharing and peer-to-peer business models, Trade mark and domain name conflicts, Patents for internet business methods, Electronic commerce and consumer protection: WTO, OECD and EU initiatives, Origins of free trade agreements (FTAs) and bilateral investment treaties, (BITs), The content of FTAs and BITs, Significance of BITs: MFN provisions of TRIPS, Regional treaties: ASEAN, NAFTA.

LML663- TRADEMARKS, DESIGNS AND INTEGRATED CIRCUITS

3 Credits (2-1-0)

This specialised course is intended to provide coverage of intellectual property aspects which are closely related to trade and competition in the globalized market. Additionally, the course is intended to educate and raise awareness of some of the complex issues that surround the protection and management of intellectual property for branding. Specific aspects of Integrated circuits, its registration and protection is included. Furthermore, practical application of protection of trademarks, industrial designs and integrated circuits is included.

LML664 – LAW OF PATENTS AND PHARMACY

3 Credits (2-1-0)

Scope, Objectives & IPR in pharmacy, Indian legal system & its role in IPR, Importance of IPR for pharmaceutical industry, the pharmaceutical industry in India. A profile, Self-regulation by pharmaceutical industry, Regulation of Pharmaceutical Industry, Select problems under the Drugs Act, The Hathi Committee Report and aftermath on essential drugs, Regulation of research and development, Public sector in pharmaceuticals, MRTPA Aspects, Advertising and consumer protection Regulation of drug-testing procedures in India, Multinational drug industry in India: Patent law aspects and dumping of unsafe drugs, Law of Patents in relation to Drug discovery and Generics, Regulation of Pharmaceutical industry through various Intellectual property law in India: Trademarks, Industrial design, Geographical indications, Copyrights, Trade secrets, Licensing and technology transfer, Ethics in IPR: Positive & negative aspects, drug related controversies, traditional knowledge, crops & life forms, current strategies & solutions.

LML665- LAW OF COPYRIGHT AND OTHER RELATED RIGHTS

3 Credits (2-1-0)

Nature and Justification of Copyright, Subject matter of copyright, Authorship and ownership in copyright, Copyright and issues in Digital world, economic rights of author, moral rights of author, Doctrine of Fair Dealing: National and International Perspectives, National and International Perspectives of Neighboring rights, Ideology of Neighboring Rights/Related rights, Performers Rights, Broadcasting organizations and producer of phonogram.

LML666-LAW RELATING TO GEOGRAPHICAL INDICATION, PLANT VARIETIES, AND BIODIVERSITY

3 Credits (2-1-0)

The law relating to Geographical Indication, Plant Varieties and Biodiversity complement each other. GIs were developed to protect consumers, offering reliable information about the goods they buy. It was initially thought that GIs could also afford protection to producers by fighting against unfair competition and "reputation theft." The third generation of GIs extended this concept to the rural landscape. If they could be used to protect producers, they could be used for rural development. Only recently was the concept extended to the environment and to the cultural and biological diversity associated with production. What remains to be seen is whether and how GIs can have an impact on the management and conservation of the cultural and biological diversity associated with products. The course intends to explore these IPRs and study the interface shared among them.

MAL111 Mathematics & Statistics

(2-1-0) 3 Credits

Mathematics is an important subject taught in the BCA programme as it is the foundation of computer science and programming. Here are some of the basic topics taught in Mathematics, such as calculus, linear algebra, Probability & statistics.

MAL112 Basics of Statistics

(3-1-0) 4 credits

Sampling Distributions, Introduction to statistics with examples, Graphical representation of data, Basic distributions, Properties, Fitting, Distribution Theory, Sampling distribution based on normal population, t-chi and F distributions, Moment generating functions, Sampling distributions and hypothesis testing.

MAL151 Engineering Maths I

(3-0-2) 4 credits

Matrices: Inverse, Rank, Solution of a system of linear equations, Eigen value and Eigen Vectors and its applications, Diagonalization of Matrices. Differential Calculus and Partial Differentiation: Taylor's and Maclaurin's series for one and two variables, partial derivatives, higher order partial derivatives, total differentiability, Jacobians, homogeneous functions, Euler's theorem and applications, Maxima and Minima. Integral calculus and its application: Double integral

and its applications to find area enclosed by plane curves, triple integral, volume of solids Vector calculus: Scalar and vector point functions. Gradient, divergence and curl and their physical interpretations. Integration of vectors, line integral, surface integral, volume integral, Green, Stokes and Gauss theorems (without proof) and their applications.

MAL152 Engineering Maths II

(3-0-2) 4 credits

Ordinary differential equations of first order and first degree, Application of first order and first degree, Linear differential equation of higher order, variation of parameters, Cauchy's, Legendre's Equations, Sequences and series, Oscillatory, convergent and divergent series, Fourier series, Conditions for a Fourier expansion, Fourier expansion of odd and even functions, Discrete fourier transform, Fourier transforms of derivatives and integrals, Convolution theorem, Formation of partial differential equations, Linear and non-linear partial differential equations, Charpit's method. Method of separation of variables.

MAL153 Mathematics-I

(3-1-0) 4 credits

Rank of a matrix, elementary transformations, elementary matrices, inverse using elementary transformations, normal form of a matrix, linear dependence and independence of vectors, consistency of linear system of equations, Orthogonal, Symmetric, skew symmetric, Hermitian Matrices, skew Hermitian Matrices, Normal and unitary Matrices and their properties, eigenvalues and eigenvectors, properties of eigenvalues, Cayley - Hamilton theorem and its applications, diagonalization of matrices, similar matrices. Double integral, change of order of integration, double integral in polar coordinates, applications of double integral to find area enclosed by plane curves, triple integral, change of variables, Differentiation of vectors, scalar and vector point functions. Gradient of a scalar field and directional derivative, divergence and curl of a vector field and their physical interpretations. Integration of vectors, line integral, surface integral, volume integral, Green, Stoke's and Gauss theorems (without proof) and their applications.

MAL251 Vedic Mathematics

(3-0-0) 3 credits

The course will help the students to speed up calculations which are stumbling blocks in mathematics. The objective is to solve the mathematical problems by using Vedic sutras.

MAL252 Mathematical reasoning and Aptitude**(3-0-0) 3 credits**

The course will help to crack the competitive exams through mathematical reasoning. The students will be able to solve mathematical problems through puzzles and logical aptitude with high speed and accuracy.

MAL253 Engineering Maths III**(3-0-0) 3 credits**

This course covers widely applicable mathematical tools for computer science, including topics from logic, set theory, combinatorics, Algebraic Structures and graph theory. Numerical Methods. Probability and Distributions.

MAL260 Probability and Statistics**(3-0-0) 3 credits**

The axiom of probability, Bayes' theorem, Population and Sample, Mathematical Expectation, Probability mass function, probability density function, Estimation, Point Estimates and Interval Estimates, Confidence Intervals, Maximum Likelihood Estimates (MLE), Statistical Hypothesis, Null Hypothesis, Significance levels, Type I and Type II errors, Special tests of significance of small and large samples, Relationship between estimation theory and hypothesis testing, Curve Fitting, Regression, The method of least squares, The least square lines, Distribution of estimators, Sampling theory of regression, Polynomial regression, Multiple linear regression.

MAL270 Numerical Analysis and Methods**(3-1-0) 3 credits**

Roots of Non-linear and transcendental Equations, Matrices and Simultaneous linear equations, Interpolation and curve fitting, Numerical differentiation and integration, Numerical solution of ordinary differential equations, Numerical solutions of partial differential equations

MAL280 Linear Algebra & Its Applications**(3-0-0) 3 credits**

Vector space, Norm, Linear Transformation, Matrix representation, Eigen Value, Canonical forms

MAL310 Numerical Methods**(2-0-2) 3 credits**

System of linear equations, nonlinear equations, interpolation, solution of differential equations

MAL616 Research Methodology**(2-1-0) 3 credits**

Foundations of Research, Scientific Research, Motivation, Research Objectives, Research Designs, Research Processes, Understanding Feasibility of Objectives and Processes, Qualitative and Quantitative Research Methods, Data Collection Processes, Biases in Data Collection, Data Preprocessing, Sampling Distribution and Confidence Intervals, Hypothesis Testing, Interpretation of Results, Literature Review, Technical Writing, Citations, Reference management software, Plagiarism, Software for Detection of Plagiarism.

MCD601 Dissertation – I**(0-0-8) 4 Credits**

The students who work on a research problem are expected to work towards the goals and milestones set in MCD601. At the end there would be a demonstration of the solution and possible future work on the same problem. A dissertation outlining the entire problem, including a survey of literature and the various results obtained along with their solutions is expected to be produced.

MCD602 Dissertation – II**(0-0-16) 8 Credits**

The students will continue the research work carried out in the course work MCD601 Dissertation – I and expected to implement/ obtained the results as outlined in the previous semester. After successfully completing the course the students need to write the Dissertation and present the completed work.

MCD603 Dissertation – I**(0-0-8) 4 Credits**

The students who work on a research problem are expected to work towards the goals and milestones set in MCD602. At the end there would be a demonstration of the solution and possible future work on the same problem. A dissertation outlining the entire problem, including a survey of literature and the various results obtained along with their solutions is expected to be produced.

MCD604 Dissertation – II**(0-0-16) 8 Credits**

The students will continue the research work carried out till MCD603 and expected to implement/ obtain the results as outlined in the previous semester. After successfully completing the course, the students need to write the Dissertation and present the completed work.

MCL501 Database Management System**(3-0-2) 4 Credits**

Basic concepts: database & database users, characteristics of the database systems, concepts and architecture, data models, schemas & instances, DBMS architecture & data independence, database languages & interfaces, data modelling using the entity-relationship approach. Extended ER concepts - Specialization/ Generalization, Aggregation, Mapping of ER model to Relational Model, Relational model concepts, relational model constraints, relational algebra, SQL - DDL, DCL & DML views and indexes in SQL, PL/SQL Programming, Stored Procedures, User Defined Functions, Cursors, Error Handling, Triggers. Relational data base design: functional dependencies & normalization for relational databases, normal forms based on functional dependencies, (1NF, 2NF, 3NF & BCNF), lossless join and dependency preserving decomposition, normal forms based on multivalued & join dependencies (4NF & 5NF) & domain key normal form. Properties of Transaction, Transaction states, Transaction Schedule, Serializability, Concurrency control techniques: locking techniques, time stamp ordering, Recoverable schedules, granularity of data items, Deadlock detection and Recovery, recovery techniques: recovery concepts, database backup and recovery from catastrophic failures. Concepts of Object Oriented Database Management systems & Distributed Database Management Systems.

MCL502 Business Analytics**(3-0-2) 4 Credits**

Definition of Business Analytics, Categories of Business Analytical methods and models, Business Analytics in practice, Big Data - Overview of using Data, Types of Data. Overview of Description Statistics (Central Tendency, Variability), Data Visualization-Definition, Visualization Techniques - Tables, Cross Tabulations, charts, Data Dashboards using MS-Excel or SPSS. Trend Lines, Regression Analysis -Linear & Multiple, Forecasting Techniques, Data Mining - Definition, Approaches in Data Mining- Data Exploration & Reduction, Classification, Association, Cause Effect Modelling. Overview of Linear Optimization, Non-Linear Programming Integer Optimization, Cutting Plane algorithm and other methods, Decision Analysis - Risk and uncertainty methods. R

Environment, R packages, Reading and Writing data in R, R functions, Control Statements, Frames and Subsets, Managing and Manipulating data in R.

MCL503 Data Communication and Networking**(3-0-2) 4 Credits**

Computer Networks: Introduction, Data Communications, Network and types, OSI model. TCP/IP model, LAN, WAN, MAN. Physical Link Layer: Data and Signals, Analog and digital signals, Transmission Impairment, Performance. Transmission: Digital Conversions, Analog Conversions, multiplexing, Transmission media: guided media and unguided media. switching: circuit-switched networks, packet switching, Data Link Layer: Design issues, addressing. Error Detection and Correction: Types of Errors, Block Coding, Cyclic Codes, Checksum, Forward Error Correction, Data-Link Layer Protocols: Simple Protocol, Stop-and-Wait Protocol and Piggybacking, HDLC, PPP. Medium Access Control: Random Access, Controlled Access, Channelization. Wired LANs: Standard Ethernet, Fast Ethernet. Wireless LAN: Architecture, IEEE 802.11. Network Layer: Network-Layer Services, Packet Switching, Network-Layer Performance, IPV4 Addresses, Network Layer Protocols: IP, ICMPV4, Routing Protocols: Unicast Routing Protocols: RIP, OSPF, BGP4. Congestion Control. ARP, RARP. Transport Layer: Services, Addressing, Connection establishment and release, error control and flow control, ATM Layers, Transport-Layer protocols, UDP and TCP. Application Layer: DHCP, DNS, Telnet, FTP, HTTP and SNMP. Network Security: Security goals and attacks, Ciphers. Internet Security: IPSec, Virtual Private Network (VPN). Transport Layer Security: SSL Architecture and Protocols. Firewalls: Packet-Filter Firewall, Proxy Firewall.

MCL504 Operating System**(3-0-2) 4 Credits**

Introduction to the Operating System. Types of OS: Batch System, Time Sharing System, Real Time System, Multiuser/Single User System Functions of Operating System: Process Management, Memory Management, File Management, I/O Devices Management, Information Management. Process Management: Process concepts, Process State, Process Control Block, Context Switch, CPU Scheduling, Scheduling Criteria, Scheduling Algorithms, Pre-emptive/ Non Pre-emptive Scheduling, Threads, Thread Structure. Process Synchronisation: Critical Section Problem, Race Condition, Synchronisation Hardware, Semaphores, Classical Problems of Synchronisation. Deadlock: Characterisation, Deadlock Prevention, Deadlock Avoidance, Detection and Recovery. Memory Management: Contiguous Allocation, External Internal Fragmentation, Paging, Segmentation, Segmentation with Paging, Virtual Memory Concept and its Implementation,

Thrashing, File Handling: Access Methods, Directory Structure, Allocation Methods - Contiguous Allocation, Linked Allocation, Indexed Allocation, Free Space Management. Device Management: Disk Structure, Disk Scheduling Algorithms, Disk Management, Case study on Window and UNIX operating systems.

MCL505 Foundations of Computer Science

(3-0-2) 4 Credits

Sets, Relation, and Number theory: Sets and Relations: Set Operations, Representation and Properties of Relations, Equivalence Relations, Partially Ordering. Mathematical Induction, Basics of Counting, Pigeonhole Principle, Permutations and Combinations, Inclusion-Exclusion Principle, Modular arithmetic, Prime numbers, congruences (linear and quadratic) Logic, Inferencing, and Recurrences: Mathematical Logic: Propositional and Predicate Logic, Propositional Equivalences, Normal Forms, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Proof by Resolution, Recurrence relations, solution methods for linear, first-order recurrence relations with constant coefficients. Group theory: Group identity and uniqueness, inverse and its uniqueness, isomorphism and homomorphism, subgroups, Cosets and Lagrange's theorem, Permutation group, Normal subgroup and quotient groups. Overview of Rings, Field and polynomials, Finite fields and some applications, Error Correcting codes (Linear and circular codes). Graph theory: Graph terminology, Paths and Circuits, Shortest Paths in Weighted Graphs, spanning trees, Eulerian Paths and Circuits, Hamiltonian Paths and Circuits, Planner graph, Graph Coloring, Five color Theorem, Matching in Bipartite Graphs.

MCL507 Data Structures and Algorithm Design

(3-0-2) 4 Credits

Introduction to data structures, arrays and its applications, Sparse Matrix, singly linked lists, doubly linked lists, circular list, Implementation of stacks and queues using arrays and linked lists, circular queues, applications of stack and queue. Trees, Binary Tree, terminology, representation, Binary Search tree (insertion, deletion and different traversals techniques), AVL Trees, B tree, B+ trees, Data Structure for Sets, disjoint sets implementation Graph Algorithms: Terminology, Representation, Graph traversals, Breadth-First Search, Depth-First Search, Shortest Paths, Minimum Spanning Trees. Notion of Algorithm, Growth of functions, Use of Big O ,etc. in analysis, Summations, Recurrences: The substitution method, The iteration method, The master method, Searching Techniques: Sequential Search Binary Search, hashing Sorting techniques: Insertion Sort, Divide and conquer Paradigm of Problem solving (Merge sort, Quick Sort), Priority Queues implementation

using Heap, sorting in linear time (count sort, radix sort, bucket sort). Design Techniques with examples: Dynamic Programming, Greedy Algorithms, Concepts of P, NP and NP hard and NP complete Class Problems; NP-completeness and Reducibility, Introduction to the concepts of Approximation Algorithms.

MCL511 Object Oriented Programming

(3-0-2) 4 Credits

Introduction to Object Oriented Programming, Advantage of Object Oriented Programming, Advantage of C ++, Applications of C ++. Basic elements in C++, C++ Functions& its Prototypes: Types of Function, Actual & Formal Arguments, Default Argument, Function Overloading, Operator Overloading. Classes & Objects in C ++, Access Specifiers, Inline Member Function, Friend Function, The 'this' Keyword, Static & Non-Static Member Function, Constructors & Destructors, Array of Class Object, Union & Classes, Nested Classes, Inheritance in C++, Overriding Member Function, Polymorphism in C++: Types of Polymorphism, Overloading Member & Non Member Function, Virtual& Pure Virtual Function, Abstract Class, Restriction On Using Abstract Classes. Introduction to Java: Java Architecture, Java Development Kit (JDK), Advantages of Java, Applications of Java, compilation and execution process. Basic elements in Java Programming, Classes & Objects in Java, Constructors, Class inheritance and Polymorphism in Java, Using super and final, Abstract Classes and Interfaces, Extending Interfaces, Dynamic Method Dispatch, Garbage Collection. Packages in Java: Defining a Packages, Java Class Libraries, User Defined packages. Standard Classes in Java: String, StringBuffer, StringTokenizer, Object class, System class, Wrapper Classes, Exception Handling in Java: fundamentals, exception types, uncaught exceptions, throw and throws keywords, finally, built-in exceptions, user-defined exceptions. Multithreading in Java: fundamentals, Java thread model, creating threads, using methods of Thread class, thread priority, thread synchronization, Inter-thread communication: wait, notify, notify all. Applets: applet package, life cycle of an applet and security concerns, configuring applets, passing parameters to an applet, Swing: Introduction to Swing, Swing Features, Hierarchy Of Java Swing Classes, Swing GUI Components, Packages Used In Swing, Using Swing API, AWT v/s Swing. Event Handling in Swings, Event Listener Interfaces, Adapter and Inner Classes, Working with windows, Graphics Object and Layout managers. Input/Output Handling in Java: Input/Output Stream, Stream Filters, Buffered Streams, Data input and Output Stream, Print Stream, File handling. Overview of JDBC, Object serialization, Remote Method Invocation, Java Native Interfaces, Java Collection Framework

MCL512 Web Technology**(3-0-2) 4 Credits**

History of the Internet, Basic internet protocols, World Wide Web (W3C), HTTP: Hypertext Transfer Protocol. Markup languages-XHTML: Introduction to HTML, basics of XHTML, HTML elements, HTML tags, lists, tables, frames, forms, defining XHTML's abstract syntax, defining HTML documents. CSS style sheets: Introduction, CSS core syntax, text properties, CSS box model, normal flow box layout, other properties like list, tables, DHTML, XML, XML documents & vocabulary, XML versions & declarations, Introduction to WML. Client Side Programming: JAVA Scripts, basic syntax, variables & data-types, literals, functions, objects, arrays, built-in objects, JAVA Script form programming, Intrinsic event handling, modifying element style, document trees, Server side programming - Java Servlets: Servlet architecture, life cycle, parameter data, sessions, cookies, servlets capabilities, servlets & concurrency. Introduction to JSP, JSP Tags, JSP life cycle, custom tags. Security Threats, Security risks of a site, Web attacks and their prevention, Web security model, Session management, authentication, HTTPS and certificates, Application vulnerabilities and defenses. Client-side security, Cookies security policy, HTTP security extensions, Plugins, extensions, and web apps, Web user tracking. Server-side security tools, Web Application Firewalls (WAFs) and Fuzzers. Introduction to Web 2.0 and Web 3.0, Concepts and Issues, Latest Trends in Web Technologies. Web Security concerns. Applications of Web Engineering Technologies in distributed systems etc. Case studies using different tools.

MCL513 Cloud Computing**(3-0-2) 4 Credits**

Parallel and Distributed System Models, Cloud enabling technologies, Cloud Platform Architecture, Service Oriented Architecture, Cloud Programming and Software environments, Performance Scalability and Consistency on Cloud, Cloud Security. The course examines the most important APIs used in the Amazon and Microsoft Cloud, including the techniques for building, deploying, and maintaining machine images and applications. Students will learn how to use Cloud as the infrastructure for existing and new services, Amazon's Elastic Block Storage and Amazon's Virtual Private Cloud.

MCL514 Computer Graphics and Multimedia**(3-0-2) 4 Credits**

Introduction; Open 3GL programming languages, Animations; Rendering & Volume Rendering; Ray Tracing; Shading & Illumination; Radiosity, 3D Transformations. Multimedia will include the digital imaging, interactive computing, multimedia or visual effects including 2D

or 3D graphics, generation, manipulation and storage of images, sound, data and other artefacts, solve design based problems within the fields of interactive multimedia, visual effects and/or computing generally, interacts with, other technologies and an awareness of its current, and likely future, role in and effect upon society.

MCL515 Internet of Things**(3-0-2) 4 Credits**

Introduction to IoT, Sensing, Actuation, Basics of Networking, Basics of Networking, Communication Protocols, Sensor Networks, Machine-to-Machine Communications Interoperability in IoT, Introduction to Arduino Programming, Integration of Sensors and Actuators with Arduino, Sending data to cloud from Arduino Introduction to Raspberry Pi, Implementation of IoT with Raspberry Pi, Introduction to SDN for IoT Introduction to Pandas in Python, Matplotlib, Cloud Computing, Fog Computing Case Study : Smart Cities and Smart Homes, Connected Vehicles, Smart Grid, Agriculture, Healthcare, Activity Monitoring.

MCL516 Network Security**(3-0-2) 4 Credits**

Network Security Basics: Need, Security essentials on layers, Introduction to IPv4 and IPv6, Security Model, Security Threats, Services and Mechanism, Attack and its types. Security issues in Internet Protocol: Active and passive Reconnaissance, Sniffing, TCP session Hijacking, UDP session Hijacking, Route Table Modification, Man in Middle Attacks, Denial of Service Attacks. Security Protocol Basics, IP Security Overview, IPSec Architecture, Authentication Header, Encapsulating Security Payload, Security Associations and Key Management, AAA Concept, RADIUS, TACACS+ technologies. Security Issues in Other Layers Web Security threats and Approaches, SSL architecture and protocol, Transport layer security, Web Security threats and Approaches, Transport layer security. Intrusion detection and Prevention System(IDPS) Principles: Uses of IDPS Technologies, Key functions of IDPS Technologies, Signature Based Detection, Anomaly Based Detection, Types of IDPS Technologies DPS Technologies Component and Network Architectures, Security Capabilities, Operation and Maintenance. Firewall Need, Characteristics and Access Policy, Types, Location and Configuration, Basing, Intrusion Prevention System.

MCL517 Cyber Security

(3-0-2) 4 Credits

Overview of Networking Concepts, Information Security Concepts, Security Threats and Vulnerabilities, Cryptography / Encryption, Security Management - Security Management Practices, Security Laws and Standards Information and network security - Access Control and Intrusion Detection, Server Management and Firewalls, Security for VPN and Next Generation Technologies, System and Application security -Security Architectures and Models , System Security, OS Security, Wireless Network and Security. Digital forensics, evidence and intelligence- operating system and file system analysis. Understanding file systems, data collection from popular operating systems such as Windows, Incident response procedures, crime scene management, recording of evidence and reporting of investigations. Understanding national and international digital forensic investigation infrastructures and the agencies involved in cybercrime investigation.

MCL518 Soft Computing

(3-0-2) 4 Credits

Neuron, Nerve structure and synapse, Artificial Neuron and its model, activation functions, Neural network architecture: single layer and multilayer feed forward networks, recurrent networks. Various learning techniques; perception and convergence rule, Auto-associative and hetero-associative memory. Perceptron model, solution, single layer artificial neural network, multilayer perception model; back propagation learning methods, effect of learning rule co-efficient; back propagation algorithm, factors affecting back propagation training, applications. Basic concepts of fuzzy logic, Fuzzy sets and Crisp sets, Fuzzy set theory and operations, Properties of fuzzy sets, Fuzzy and Crisp relations, Fuzzy to Crisp conversion. Membership functions, interference in fuzzy logic, fuzzy if-then rules, Fuzzy implications and Fuzzy algorithms, Fuzzifications & Defuzzification's, Fuzzy Controller, Industrial applications. Basic concepts, working principle, procedures of GA, flow chart of GA, Genetic representations, (encoding) Initialization and selection, Genetic operators, Mutation, Generational Cycle, applications.

MCL519 Advanced Computer Architecture

(3-0-2) 4 Credits

Fundamentals of Computer Design, Instruction Level Parallelism, Basic compiler techniques for exposing ILP, Reducing branch cost with prediction, Dynamic scheduling with Tomasulo's algorithm, Hardware based speculation, Exploiting ILP, Multiprocessors and Thread level Parallelism, Memory Hierarchy Design, Vector

and GPU Architectures :- SIMD Parallelism, Vector architectures: VMIPS, Vector Performance, Multiple lanes, Vector Memory Banks, Warehouse-scale Computers:- Introduction to clusters and data centers, Programming models and workloads, Computer architecture of WSC, Array switch, Storage, Memory hierarchy of WSC.

MCL520 Social Network Analysis

(3-0-2) 4 Credits

Introduction to Social Network Analysis, Introduction to Python/Colab, Introduction to NetworkX, Network Measures, Network Growth Models, Link Analysis, Graph Visualization Tools, Community Detection, Link Prediction, Cascade Behavior and Network Effects, Anomaly Detection, Introduction to Deep Learning, Graph Representation Learning, Applications and Case Studies.

MCL521 Game Theory

(3-0-2) 4 Credits

Overview of Basic Concepts: Graphs and digraphs, incidence and adjacency matrices, isomorphism, the automorphism group; Introduction to trees: Equivalent definitions of trees and forests, Cayley's formula, Matrix-Tree, and The Matrix-Tree theorem, minimum spanning trees; Connectivity: Cut vertices, cut edges, bonds, the cycle space and the bond space, blocks, Menger's theorem; Paths and Cycles: Euler tours, Hamilton paths and cycles, theorems of Dirac, Ore, Bondy and Chvatal, girth, circumference, the Chinese Postman Problem, the Traveling Salesman problem, diameter and maximum degree, shortest paths; Matchings: Berge's Theorem, perfect matchings, Hall's theorem, Tutte's theorem, Konig's theorem, Petersen's theorem, algorithms for matching and weighted matching (in both bipartite and general graphs), factors of graphs (decompositions of the complete graph), Tutte's f-factor theorem; Independent sets and covering numbers, Turan's theorem, Ramsey theorems; Colorings: Brooks theorem, the greedy algorithm, critical graphs, chromatic polynomials, girth and chromatic number, Vizing's theorem; Graphs on surfaces: Planar graphs, duality, Euler 's formula, Kuratowski's theorem, toroidal graphs, 2- cell embeddings, graphs on other surfaces; Directed graphs: Tournaments, directed paths and cycles, connectivity and strongly connected digraphs, branching; Networks and flows: Flow cuts, Max flow min cut theorems, perfect square; Selected topics: Dominating sets, the reconstruction problem, intersection graphs, perfect graphs, random graphs.

MCL522 Theory of Computation**(3-0-2) 4 Credits**

Overview: Alphabets, Strings & Languages, Chomsky Classification of Languages, Finite Automata, Deterministic finite Automata (DFA) & Nondeterministic finite Automata (NFA), Equivalence of NFA and DFA, Minimization of Finite Automata, Moore and Mealy machine and their equivalence, Regular expression and Kleen's Theorem(with proof), Closure properties of Regular Languages, Pumping Lemma for regular Languages(with proof), Context free grammar, Derivation trees, Ambiguity in grammar and its removal, Simplification of Context Free grammar, Normal forms for CFGs: Chomsky Normal Form & Greibach Normal Form, Pumping Lemma for Context Free languages, Closure properties of CFL(proof required), Push Down Automata (PDA), Deterministic PDA, Non Deterministic PDA ,Equivalence of PDA and CFG, Overview of LEX and YACC. Turing machines, Turing Church's Thesis, Variants and equivalence of Turing Machine, Recursive and recursively enumerable languages, Halting problem, Undecidability, Examples of Undecidable problem. Introduction to Complexity classes, Computability and Intractability, time complexity, P, NP, Co-NP, Proof of Cook's Theorem, Space Complexity, SPACE, PSPACE, Proof of Savitch's Theorem, L ,NL ,Co-NL complexity classes.

MCL601 Software Project Management**(3-0-2) 4 Credits**

Stepwise Project planning: Introduction, selecting a project, identifying project scope and objectives, Project Evaluation & Estimation: Cost benefit analysis, cash flow forecasting, cost benefit evaluation techniques, Selection of an appropriate project report; Choosing technologies, choice of process model, Activity planning :Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities, network planning model, Risk Management: Introduction, the nature of risk, managing risk, risk identification, risk analysis, reducing the risks, evaluating risks to the schedule, calculating the z values Resource allocation Monitoring the control, creating the frame work, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring Getting the project back to target, change control.

MCL602 Machine Learning**(3-0-2) 4 Credits**

Data Pre-processing and Vector Normalization for ML Clustering Algorithms, K Means, Hierarchical, Association Rule Learning, Apriori, Eclat, Reinforcement Learning, Upper Confidence Bound

UCB, Thompson Sampling, Unsupervised Learning Hierarchical, DBSCAN, Fuzzy C-Means, Dimensionality Reduction, Principal Component Analysis PCA, Linear Discriminant Analysis LDA, Kernel PCA, Model Selection , Model Selection, XGBoost , Feature Selection- Filter and Wrapper, Introduction to Self Organizing Maps, Building a Self Organizing Map.

MCL603 Computer Organization and Architecture**(3-0-2) 4 Credits**

Data Representation: Binary numbers, binary codes, fixed point representation, floating point representation, error detection codes. Computer Arithmetic: Introduction, addition and subtraction, multiplication algorithms, division algorithms, floating point arithmetic operation, decimal arithmetic unit, decimal arithmetic operations. Register Transfer and Micro operation: Register transfer language, register transfer, bus and memory transfer, arithmetic microoperations, logic micro operations, shift micro operations. Basic Computer Organization and Design: Instruction codes, computer registers, computer instructions, timing & control, instruction cycle, memory reference instructions, input- output and interrupts, design of basic computer, design of accumulator logic. Microprogrammed Control Unit: Control memory, address sequencing. Central Processing Unit: Introduction, general register organization, stack organization, instruction formats, addressing modes. RISC and CISC. Input - Output Organization: Peripheral devices, input - Output interface, asynchronous data transfer, modes of data transfer, priority interrupt, direct memory access, input - output processor. Memory Organization: Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory, memory management hardware. Parallel Processing, Loosely and Tightly Coupled Processors, Amadhl's Law, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors, Multiprocessors, Interconnection Structures. Inter-processor Arbitration, Communication and Synchronization. Cache Coherence.

MCL611 Mobile Computing**(3-0-2) 4 Credits**

Mobile Physical Layer: Review of generation of mobile services, overview of wireless telephony, cellular concept, GSM: air-interface, channel structure, location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS. Mobile Computing Architecture: Issues in mobile computing, three tier architecture for mobile computing, design considerations, Mobile file systems, Mobile databases. WAP: Architecture, protocol stack, Data gram protocol, Wireless transport layer security, Wireless transaction

protocol, wireless session protocol, application environment, and applications. Mobile Data Link Layer: Wireless LAN over view, IEEE 802.11, Motivation for a specialized MAC, Near & far terminals, Multiple access techniques for wireless LANs such as collision avoidance, polling, Inhibit sense, spread spectrum, CDMA , LAN system architecture, protocol architecture, physical layer MAC layer and management, Hiper LAN. Blue Tooth: IEEE 802.15 Blue tooth User scenarios, physical, MAC layer and link management. Local Area Wireless systems: WPABX, IrDA, ZigBee, RFID, WiMax. MOBILE IP Network Layer: IP and Mobile IP Network Layer- Packet delivery and Handover Management Location Management-Registration- Tunnelling and Encapsulation-Route Optimization- Dynamic Host Configuration Protocol, Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), VoIP -IPSec. Mobile Transport Layer: Traditional TCP/IP, Transport Layer Protocols- Indirect, Snooping, Mobile TCP, Support for Mobility: Data bases, data hoarding, Data dissemination, UA Prof and Caching, Service discovery, Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, Mobile devices and File systems, Data Synchronization, Sync ML. Introduction to Wireless Devices and Operating systems: Palm OS, Windows CE, Symbian OS, Android, Mobile Agents. Introduction to Mobile application languages and tool kits.

MCL612 Big Data Analytics

(3-0-2) 4 Credits

Database evolution, Big data and Hadoop overview, Hadoop Distributed File System (HDFS), Map Reduce, Hadoop Streaming and Compression. Look: Indexing- Index creation, Ranking, Page Rank Searching- Enterprise search, Searching structured data, Object Search, Locality Sensitive Hashing and Memory. Listen: Streams, Information and Language, Analyzing Sentiment and Intent Load: Databases and their Evolution, Big data Technology and Trends. Programming: Map-Reduce, Map-Reduce applications and its efficiency, Big-Table and HBase, Learn: Classification, Clustering, and Mining, Information Extraction Connect: Reasoning: Logic and its Limits, Dealing with Uncertainty. Predict: Forecasting, Neural Models, Deep Learning, and Research Topics. Data Analysis: Regression and Feature Selection.

MCL613 Blockchain Technology

(3-0-2) 4 Credits

Introduction, Asset, Transactions, Distributed Ledger Technology, , Blockchain network , Blockchain

components, Blockchain Architecture, Applications, Benefits of Blockchain Technology, Limitations of blockchain. Asymmetric and Symmetric Cryptography, Types of Blockchain (Public, Consortium, and Private), Digital Signatures, Hashing- SHA256 , Data Integrity , Merkle tree, . Implications of the Cryptography and Decentralization. Consensus decision-making, Byzantine Generals Problem, Forks and Byzantine Fault Tolerance, Proof of Work, Proof of Stake, Proof of Work vs Stake Introduction to Bitcoin, Hyperledger, Bitcoin creation and economy, Bitcoin exchanges, Wallet, Bitcoin scripts, Bitcoin protocols - Mining strategy and rewards, Gas Limit Introduction to smart contracts, Overview of Ethereum, Ethereum vs. Bitcoin, Logic and Challenges of Smart Contracts, Smart contract programming architecture, Solidity and remix, using smart contracts to enforce legal contracts. Ethereum, Hyperledger, IBM Blockchain, Multichain, Hydrachain, Ripple, R3 Corda, BigChainDB, IPFS, Dapps.

MCL614 Artificial Intelligence and Expert Systems

(3-0-2) 4 Credits

Introduction: Introduction to intelligent agents Problem solving: Problem formulation, uninformed search strategies, heuristics, informed search strategies, constraint satisfaction Solving problems by searching, state space formulation, depth first and breadth first search, iterative deepening, Logical Reasoning : Logical agents , propositional logic, inferences ,first-order logic, inferences in first order logic, forward chaining, backward chaining, unification , resolution, Game Playing: Scope of AI -Games, theorem proving, natural language processing, vision and speech processing, robotics, expert systems, AI techniques- search knowledge, abstraction, Learning from observations: Inductive learning, learning decision trees, computational learning theory, Explanation based learning Applications: Environmental Science, Robotics, Aerospace, Medical Sciences etc.

MCL615 Digital Image Processing

(3-0-2) 4 Credits

The objective of this course is to introduce the students to the fundamental techniques and algorithms used for acquiring, processing and extracting useful information from digital images. Particular emphasis will be placed on covering methods used for image sampling and quantization, image transforms, image enhancement and restoration, image encoding, image analysis and pattern recognition. In addition, the students will learn how to apply the methods to solve real-world problems in several areas including medical, remote sensing and surveillance and develop the insight necessary to use

the tools of digital image processing (DIP) to solve any new problem.

MCL616 Natural Language Processing

(3-0-2) 4 Credits

Computers in Linguistics and Natural Language Processing, Syntax, Semantics, and Pragmatics, Applications of NLP, The role of machine learning, Brief history of the field, The nature and use of text corpora, Pattern matching using Regular Expressions, Corpus Search and Counting, Regular languages: N-grams, The role of language models, Simple N-gram models, Estimating parameters and smoothing, evaluating language models, Lexical syntax, Tokenization, Types of Tokenizers, Part-of-Speech Tagging, Stemming, Lemmatization, Stop-Word Removal. Grammar formalisms and treebanks, Context-free languages, Syntactic ambiguity, Context-free grammars, Push-down automata, Chomsky Hierarchy, Efficient parsing for context-free grammars (CFGs), dependency parsing, Chunking, Chinking. Lexical semantics and Word-Sense Disambiguation, Compositional semantics, Semantic Role Labeling and Semantic Parsing, Named Entity Recognition and relation extraction, Co-reference resolution, Feature Engineering: Bag of Words, Count Vectorizer, TF-IDF, Building a simple ML model for NLP applications like Text Classification and Sentiment Analysis. Basic issues in Machine Translation, Statistical translation, word alignment, phrase-based translation, and synchronous grammars.

MCL617 Advanced DBMS

(3-0-2) 4 Credits

Transactional Control: Commit, Save point, Rollback, DCL Commands : Grant and Revoke, Types of locks : Row level locks, Table level locks, Shared lock, Exclusive lock, Deadlock, Synonym : Create synonym, Sequences: Create and alter sequences, Index : Unique and composite, Views : Create/Replace, Update and alter views, Basics of PL/SQL, Datatypes, Advantages, Control Structures : Conditional, Iterative, Sequential, Exceptions: Predefined Exceptions ,User defined exceptions, Cursors: Static (Implicit & Explicit), Dynamic, Procedures & Functions, Packages : Package specification, Package body, Advantages of package, Fundamentals of Database Triggers, Creating Triggers, Types of Triggers : Before, after for each row, for each statement, Basics of Functional Dependency, Functional dependency diagram and examples, Full function dependency (FFD), Armstrong's Axioms for functional dependencies, Redundant functional dependencies, Closures of a set of functional dependencies, Lossy Decomposition, Lossless join decomposition, Dependency-Preserving Decomposition, Basics of Normalization, Normal Forms: First Normal Form (1NF), Second Normal Form (2NF),

Third Normal Form (3NF), 4NF, BCNF, Introduction to transaction concepts, Concurrency, Methods for Concurrency control : Locking Methods, Timestamp methods, Optimistic methods.

MCL618 Python Programming

(3-0-2) 4 Credits

Procedural vs. Object-Oriented Programming, Literals , Variables and Identifiers, Operators, Expressions and Data Types, What Is a Control Structure, Boolean Expressions (Conditions), Relational Operators, Membership Operators, Selection Control, Multi-Way Selection, Iterative Control, While Statement , Infinite loops, Definite vs. Indefinite Loops, Boolean Flags and Indefinite Loops, List Structures, Common List Operations, Tuples , Nested Lists, For Loops , While Loops and Lists (Sequences), Assigning and Copying Lists , Dictionary Type in Python, Set Data Type , Programme Routines , Defining Functions, More on Functions , Calling Value-Returning Functions, Calling Non-Value Returning Functions, Parameter Passing, Arguments in Python Default Arguments in Python, Variable Scope, Recursive Function, Module Specification , Top-Down Design, Developing a Modular Design of the Calendar Year Programme, Object-Oriented Programming concepts, Numpy - Creation on Array ,Array generation from Uniform distribution, Random array generation, reshaping, maximum and minimum, reshaping, Arithmetic operations, Mathematical functions, Bracket Indexing and Selection, Broadcasting, Indexing a 2D array (matrices); Pandas - Creating a Series - from lists, arrays and dictionaries, Find Null Values or Check for Null Values, Reading data from csv, txt, excel, web, Visualization - Installing and setting up visualization libraries, Canvas and Axes, Subplots, Common plots - scatter, histogram, boxplot, Logarithmic scale, Placement of ticks and custom tick labels.

MCL619 Optimization techniques

(3-0-2) 4 Credits

Formulations of Constrained and unconstrained problems, local and global optima, convex sets and convex functions, convex optimization, necessary and sufficient conditions for an optimal solution, constraint qualifications, Kuhn-Tucker conditions for an optimal solution, necessary and sufficient conditions for problems with equality and inequality constraints, second order necessary and sufficient conditions, lines search and multi-dimensional search, branch and bound and genetic algorithm, convergence of algorithms and methods for comparing them.

MCL620 Big Data and NoSQL**(3-0-2) 4 Credits**

Big Data and basic architecture, value, and potential use cases. Some key technologies, including Apache Hadoop, Amazon EMR, Apache Hive, and Apache Pig. Although the course focuses on industry-standard Big Data solutions, About the AWS Big Data ecosystem, a set of services and solutions provided by AWS to build and enhance Big Data solutions. NoSQL (Non-SQL or Not-only-SQL) databases are increasing in popularity due to the growth of data as they can store non-relational data on a large scale, and can solve problems that regular databases can't handle. MongoDB is one of the popular database systems to store such kind of unstructured data. This course covers MongoDB, its configuration, data access, update and other operations on a No-SQL database. By the end of this course, the students will be able to design a No-SQL database and will be able to query the database without SQL by using JavaScript Map and Reduce functions and also using HTTP to retrieve raw JSON data.

MCL621 Compiler Design**(3-0-2) 4 Credits**

Brief overview of the compilation process, structure of compiler & its different phases, lexical analyzer, cross compiler, Bootstrapping, quick & dirty compiler, Shift-reduce parsing, operator- precedence parsing, top down parsing, predictive parsing , LL(1) and LL(k) grammar, bottom up parsing, SLR, LR(0), LALR parsing techniques. Design and implementation of a lexical analyzer and parsing using automated compiler construction tools (eg. Lex, YACC, PLY), Syntax-directed translation schemes, implementation of syntax directed translations, intermediate code, postfix notation, three address code, quadruples, and triples, translation of assignment statements, Boolean expressions, control statements, Semantic Analysis, Type Systems, Type Expressions, Type Checker, Type Conversion, Symbol table, data structures and implementation of symbol tables, representing scope information. Run Time Storage Administration, implementation of a simple stack allocation scheme, storage allocation in block structured languages and non-block structured languages, Error, Lexical-phase errors, syntactic phase errors, semantic errors. The principle sources of optimization, loop optimization, the DAG representation of basic blocks, value number and algebraic laws, global dataflow analysis, Object programmes, problems in code generation, a machine model, a single code generator, register allocation and assignment, code generation from DAGs, peephole optimization.

MCP120 Seminar**(0-0-4) 2 Credits**

Research and development seminar based on problems of practical and theoretical interest. Evaluation will be based on student seminars, written reports, and evaluation of the developed system and/or theories.

MCS501/502/601/602 Community Service**(0-0-2) 1 Credit**

The NorthCap University recognizes the need for giving back to the community and encourages and propels students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University. Integrating Community is applicable to all Programmes across the University.

MCT201 Summer Training/ Industry Project**3 Credits**

Students will be sent to the industries in their Summer vacations (after 2nd Semester), to have a hands on experience and exposure to industrial environment. The assessment of this training will be done in 3rd semester.

MCV501 Skill Based Course**(1-0-2) 2 Credits**

Theoretical and practical knowledge based on industry-oriented topics shall be provided in the form of tutorials, presentation and laboratories.

MCV502 Value Added Course (Audit)

Theoretical and practical knowledge based on industry oriented topics shall be provided in the form of tutorials, presentation and laboratories.

MEC-620: Seminar**(2 Credits)**

Every student will be required to present a seminar on

a topic approved by the department except on his/her Major Project. The committee constituted by the Head of the Department will evaluate the presentation and will award one of the grades on the basis of "NCU Course credit Regulation-Engineering.

MED502 Minor project (Specialization based)

0-0-10 (5)

The minor project will be a design project (hardware/software) on a topic suggested by the course coordinator to be completed during the designated duration. It may be of practical and theoretical interest. It has to be done under the guidance of a faculty and students are expected to complete literature survey, feasibility testing, develop or implement the research work.

MED-601: Dissertation -I

(6 Credits)

Every student will carry out Major Project under the supervision of supervisor(s). The topic will be approved by the committee formed by the Head of Department. The Major Project work should involve extensive literature survey, design, development, analysis and computer simulation (if applicable), fabrication and experimentation work. The project report is expected to show clarity of thought and expression and analytical or experimental or design skills. Every student will be required to present two Major Project seminar talks. First at the beginning of the Major Project to present the scope of the work and to finalize the topic, and the second towards the end of the semester, presenting the work carried out by him/her in the semester. The committee constituted by the Head of the Department will screen both the presentations so as to award grades. The grading shall be done on the basis of "NCU Course credit Regulation-Engineering."

MED-602: Dissertation-II

(12 Credits)

The Dissertation -I (MED-600) will be continued as Dissertation- II. Major Project will be evaluated and grades will be awarded by the committee of examiners formulated by the Head of the department based on the "NCU Course credit Regulation-Engineering."

MEL160 Basic of Mechanical Engineering

(2-0-2) 3credits

Introduction to Thermodynamics: Thermodynamics Laws and applications; Concepts of state, work and

heat, internal energy, enthalpy and entropy. Boilers: construction, classification and application. I.C engines: two-stroke and four-stroke petrol and diesel engines; MPFI technology. Advances in automobile technologies. Simple lifting Machine. Power Transmission. Stress and strain. Applied Mechanics: Force System, Laws of Mechanics and Introduction of Moment of Inertia. Engineering materials: classification, properties & applications. Plant layout. Introduction to Mechatronics and Robotics.

MEL410 Design of Thermal Systems

(4 credits)

Introduction to Thermal Systems Design, Overview of thermal systems and their importance in engineering applications, Design process for thermal systems, Design considerations, constraints, and objectives; Heat Transfer Fundamentals, Modes of heat transfer (conduction, convection, radiation), Heat transfer equations and principles, Heat transfer coefficients and correlations; Thermal System Modeling and Analysis, Mathematical modeling of thermal systems, Analysis techniques (steady-state, transient, lumped parameter, distributed parameter), Performance evaluation and system optimization; Fluid Flow Systems, Fluid properties and behaviour (viscosity, pressure, flow rate), Flow system analysis (pipe flow, pump selection, pressure drop calculations), System components (valves, fittings, pumps); Heat Exchanger Design, Types of heat exchangers (shell and tube, plate, finned, etc.), Heat exchanger selection and sizing, Design considerations and performance evaluation; Thermal System Integration, System-level considerations and constraints, Component selection and integration, Heat transfer and fluid flow system interactions; Thermal Energy Storage Systems, Types of thermal energy storage (sensible heat, latent heat, thermochemical), Storage system design and optimization, Integration of thermal energy storage in thermal systems. PINCH technology.

MEL412 Supply Chain Management

(4 credits)

SCM - Need, Conceptual model, evolution, approach - traditional and modern, logistics, inbound and outbound, 3PL, 4PL, vendor relationships, elements of L&SCM, Global supply chain perspectives - Drivers, challenges, risk, Demand forecasting, methods, inventory management, , bull whip effect, inventory costs, EOQ, VMI, Role of SCM in JIT, lean management, Agile, mass customization, aggregate planning, Warehousing - types, functions, strategy, Transportation - elements, importance, modes, multi modal, containerization, Fleet management - process, factors, Distribution strategies - Cross docking, milk run, direct shipping, hub

and spoke model, Role of IT in SCM – need, Tools, application in SCM, Internet, data mining, use of IT in warehousing, customer service etc., RFID, GPS, GIS, supply chain collaboration, Decision support system in SCM, Performance measures – internal and external, activity based costing, benchmarking, balance score card.

MEL420 Advanced Theory of Machines

(3-0-2) 4 credits

Introduction to advanced mechanisms: classification and applications, Position analysis: analytical and graphical methods, Velocity and acceleration analysis: instantaneous center of rotation and relative motion analysis, Synthesis of Mechanisms: Dimensional synthesis: graphical and analytical methods, Motion generation: design of linkages for specific motion, Path and function generation: techniques for designing mechanisms to achieve desired paths and functions, Dynamics of Mechanisms: Newton-Euler equations: application in mechanism dynamics, Lagrangian mechanics: principles and applications in mechanical systems, Dynamic force analysis: methods for evaluating forces in mechanisms, Balancing of mechanisms: techniques for balancing rotating and reciprocating masses.

MEL421 - Project Leadership, Strategy and Scope

(3-0-2) 4 credits

Project Quality & Scope Management; Human Resource Management; Project Communication Management; Professional and Social Responsibility; Responsibility; Respect; Honesty; Fairness.

MEL422 - Business Agile Project Management

(3-0-2) 4 credits

Project Stakeholder Management; Project Procurement Management; Project Risk Management; Knowledge Area Processes; Plan Risk Management; Identify Risk; Perform Qualitative and Quantitative Risk Analysis.

MEL423 - Advanced Supply Chain Management

(3-0-2) 4 credits

Demand and Inventory; Introduction to Inventory Management; Need for Selective Inventory Management; Just-In-Time and Lean Supply Chain Management; Push Inventory Planning; Introduction to Lean Supply Chain Management; Storage; Stores Location and Layout Planning; Storage Methods; Units of Issue; Physical Stock Verification; Warehousing; Yard Management;

Insurance; Supplier Relationship Management; Customer Relationship Management; Green Logistics.

MEL424 - Integrated Logistics Strategy and Supply chain Performance Measurement

(3-0-2) 4 credits

Logistics, Material Handling and Packaging; Material handling systems and the role of packaging, Overview of handling technologies, The rationale and impact of packaging in the supply chain; Transportation Management; Performance Measurement; Supply Chain Risk Management.

MEL460 Quality Assurance and Reliability Engineering

(4 credits)

Definition of Quality, the world Quality Gurus, Introduction to Control charts. Control chart for variables and attributes. Process capability analysis; statistical tolerance design and Selective assembly systems, Introduction to 6 Sigma, Cost of quality, Costs of Quality, Kaizen, 5S, Benchmarking. Acceptance Sampling, Sampling Plans, ISO 9000. Quality Circles, 7 QC tools, Advanced 7 QC tools Quality Function Deployment, National Quality Award Model Framework, Reliability & testing. Failure models of components, MTBF / MTTR / OEE, redundancy, Maintainability and Availability, TPM, Total Quality Management, Manufacturing Quality vs Service quality.

Practice (P): Quality related case studies, Quality problem practices, application of QC tools taught in the course to the Major project as a mini project / assignment with 10% weightage. An interactive teaching on key topics of Kaizen/ QC circles /Six sigma / introduction to DOE by industry expert and a group assignment on a special quality topics to be presented in the semester end with 15% weightage.

MEL470 Product Design and Development

(2-0-2) 3 credits

Introduction to Product design and development. Development Processes and Organizations, Opportunity Identification, Product Planning, Identifying Customer Needs, Product Specifications, Concept- generation, selection and testing. Product life-cycle, Selection of a profitable product. Industrial design, Design for Environment, Design for manufacturing, Prototyping, robust design, Patents and Intellectual Property. Product Development Economics. Mini Projects for teams.

MEL510- Introduction to FEM**(2-1-0) 3 credits**

Linear algebra: matrix operations, numerical solution of linear matrix equations; Elasticity theory: strain-displacement and stress-strain relations, temperature effects, St. Venant's principle; Discretization (1-D and 2-D), Stiffness matrix, FEM equation for simple elements (bar, truss, beam, frame, and CST elements), assembling of elements, boundary conditions, nodal solutions; Coordinate systems, Shape functions, Consistent loads, Variational equation for deriving K; Heat conduction equations, FEM formulation in 2-D conduction problems; Practical points in using FEM software (Types of analysis, Meshing, Post-processing, Non-linear analysis)

Tutorial (T): Numericals on various topics; Modeling and simulation of 1-D and 2-D problems using software: static structural analysis, and heat conduction; Presentations by students about their course mini-projects

MEL520-Advanced Thermodynamics**(4 credits)**

Recapitulation of zeroth, 1st, 2nd laws, concepts of irreversibility, availability, energy, analysis of simple closed and open systems, and methods for analyzing thermodynamic properties, direction of the process by the analysis of exergy, entropy, free energy, property equations and thermodynamic properties of real gases, methods for analyzing the multi-component systems, Legendre transforms and Maxwell relations, chemical thermodynamics, and thermodynamic processes and properties of special systems, etc., pinch technology, multi-component system, concept of fugacity, chemical potential, general conditions for thermodynamic equilibrium, instability of thermodynamic equilibrium and phase transition (gases to liquid), thermodynamics of reactive mixtures, thermodynamics of Combustion Chemistry, elements of irreversible thermodynamics.

MEL 550 – Advanced Heat and Mass Transfer**(3-1-0) 4 credits**

Recapitulation of laws governing heat & mass transfer; General conduction equation - in rectangular cylindrical and spherical coordinates; Unsteady state conduction- large plane walls, cylinder and spheres; Heat transfer from extended surfaces- proper length of a fin; Multidimensional conduction; Numerical solution of conduction problems; Thermal radiation gray body radiation, radiation shields; Natural and forced convection; Heat exchangers- effectiveness-NTU; Phase Change heat transfer- flow boiling and film condensation; Special topics in heat transfer.

Tutorial (T): Experiments will be carried out in lab on different test setups; numerical on heat transfer problems.

MEL 560- Advanced Machine Design**(3-0-2) 4 credits**

Design methodology (Phases of a design project, Need identification and problem formulation, Designing to codes and standards); Failure theories (static failure theories, fatigue failure, fracture mechanics); Stress analysis and design of machine elements under conditions of impact, inertial forces, thermal, and residual stresses; Surface Failure (Surface geometry, Friction, Adhesive wear, Abrasive wear, Corrosion wear, Surface fatigue, Spherical contact, Cylindrical contact); Reliability engineering (Distribution models, Probabilistic approach to design, Definition of reliability, Constant and variable failure rates, System reliability, Maintenance and repair, Design for reliability, FMEA, Fault tree analysis).

Tutorial (T): Presentations and case studies by students related to the course content; Presentations and case studies by students related to their mini projects; case studies; solving problems related to the syllabus.

MEL 570- Production and Operations Management**(3-1-0) 4 credits**

Production and Operations function- Production systems, Product Strategy and integrated product development, Process planning, Capacity Planning, Facilities Location Strategies, Methods study and Work Measurement, Line balancing, Group Technology, Cellular Manufacturing, Flexible manufacturing system, Aggregate production planning, Master Production Scheduling, Shop Scheduling and Shop Floor Control; Inventory control-JIT purchasing, Lead-time control; Maintenance Planning and Management- Corrective, Preventive and Predictive maintenance; Manpower Scheduling- Techniques of manpower scheduling, Service Operations Management. Value flow and application of VSM. QFD.

MEL590N Waste Management**(2-1-0) 3 credits**

Ecosystem, waste movement, UN SDG goals, waste handling and generation, consumption, pollution, types of waste, different classifications, waste characterization, Categories of Solid Wastes, E- waste generation & handling, Solid Waste management tools - techniques for reducing production of waste, managing through segregation and scientific disposal, Waste reduction strategies, Economic benefits, Conventional Practices

vs Modern Practices; Life Cycle Analysis, Extended Producer Responsibility, Ecological Footprint, Sustainable consumption production.

MEL601-TH Computational Fluid Dynamics and Heat Transfer

(4 credits)

Basic equations of Fluid flow and Heat Transfer; Classification of governing equations, Boundary conditions; Discretisation methods, finite difference method, finite element method and finite volume method; Finite volume method for diffusion & diffusion-convection problems; SIMPLE algorithm and flow field calculations, variants of SIMPLE; Turbulence and turbulence modeling; Numerical method for radiation heat transfer. Pn: Numerical on cfd, case studies and presentations.

MEL603MD Design for manufacturing assembly

(4 credits)

History, advantages, and importance of DFMA; Role of DFM in product specification and standardization; Steps for applying DFMA during product design; Methods of material, shape and process selection; Design for various processes (casting and moulding, powder processing, machining, cold working, sheet metal working, surface polishing and coating); Design for quality and reliability; Robust design approaches; Design approaches for assembled products and assembly systems (Economics of assembly, Taxonomy of assembly operations, Entity Relationship Diagram, Assembly sequence analysis, Liaison diagram, Guidelines for design for assembly) Practical (Pn): Case studies on design for manufacturing and assembly; Solving sample problems; Presentations by students on selected topics

MEL607 Advanced Mechanics of Solids

(4 credits)

3-D analysis of stress. 3-D analysis of strain and deformation. Constitutive Relations (Generalized Hooke's law, 3-D stress-strain relation for linear elastic Isotropic solids, Compatibility equations). Mechanical Behavior of Solids (Role of experiments in solid mechanics; Elastic material behavior; Plastic material behavior; Visco-elastic material behavior). 2-D elasticity boundary value problems (Plane stress deformation, plane strain deformation, St. Venant's principle, stress concentration problems). Rayleigh, Euler-Bernoulli and Timoshenko beam theories. Torsion of open and closed hollow beams. One-Dimensional Plasticity (Plastic Bending, Plastic "Hinges", Limit Load (Collapse) of Beams)

Practical (Pn): 1. Case study related to elastic material behaviour. 2. Case study related to Plastic material behavior. 3. Case study related to Visco-elastic material behavior. 4. Case study related to boundary value problems. 5. Case study related to Rayleigh beam. 6. Case study related to Euler-Bernoulli beam theory. 7. Case study related to Timoshenko beam theory. 8. Presentation by students related to the topics of the course (They should read research paper and explain to the class).

MEL609 Modern Power Plants

(3-0-2) 4 credits

Power Plant Economics - Factors affecting power plant operation; Analysis of steam cycles; Fuels for Power Plants -Coal, Natural Gas, Diesel and Biomass; Steam Generators - Types and operation; Steam power plant - Pulverized, Coal and Fluidized Bed Technology; Gas turbine and combined cycle power plants - types and operation; Nuclear power plant - Types and operation, Advantage & limitation, Nuclear reactors: types & their relative merits & limitation; Hydroelectric power plant - Construction and operation of different components of hydraulic power plant; Cogeneration, Environmental aspects of power generation - Emissions from power plants, mitigation of emissions, ecology and environmental effects and nuclear waste disposal.

Numerical on the economics of power plants and steam cycles, case studies, and presentations.

MEL611-IP Product Life cycle Management

(4 credits)

Introduction to PLM-Definition, Scope, benefit, spread; The PLM Environment-Product data issues, complex changing environment, Product pains, product opportunities; Business process in the PLM environment Introduction, process reality in a typical company, Business process activities in an PLM initiative; Product Data and process in PLM Environment- Reality in a typical company, Product data activities in the PLM initiative; Information system in the PLM Environment-Introduction to PLM applications, Application activities in the PLM initiatives, Best practice PDM selection system; Organizational change management in the PLM environment- Introduction, participants in change, OCM activities in PLM initiative; Project/programme management in the PLM initiative Introduction, PM activities in a PLM initiative. The PLM Initiative: Introduction, Approaches to PLM initiative, Case Studies.

Practical (Pn): Case studies, Group Discussions and presentations related to applications of PLM in Industries.

MEL611-TH Renewable Energy Systems**(4 credits)**

Energy & Climate Change, Indian Perspective. Power Generation Systems - How do we produce electricity on large scale, Solar Thermal Heat/Power Systems - Converting heat from the sun into electricity. Wind Energy and Systems - Harnessing wind to generate electricity, Photovoltaic Systems - Converting sunlight into electricity, Hydro-electric Power Systems - Water energy, Geothermal Energy - Energy from the Earth's core, Bio - energy utilization routes - Utilizing biomass, waste for electricity generation, Energy Storage - Batteries, Hydrogen Energy Storage and Utilization - Carbon free energy, Ocean Thermal Energy Conversion, Economic Analysis - To know Return of Investments (ROI)

MEL 613 IP Project Management**(3-0-2) 4**

Introduction to Project management: The growing importance/d relevance in the current environment. Project vs. Ongoing Operations, project characteristics, common terms used in project, growing importance, steps & check points, phases in the project cycle, Project Types: Pure Project, Functional Project and Cross-Functional or matrix structure. People aspect: Project leader, Roles, responsibilities, authority, accountability, team structure, stake holders. Project appraisal: Project Budgeting, Investment Planning, Pay back periods, ROI, IRR, NPV, project selection decisions Project Risk Management: Risk identification, its assessment, Mitigation plan and case study. Project Network techniques: Work Breakdown Structure, Project Control Charts, GANTT charts, Network Planning Models; AOA & AON approach, Critical Path Method (CPM), Programme Evaluation and Review Technique (PERT), Floats, Network understanding, drawing and the analysis. Project Software: Primavera software and its application. Project Crashing & Leveling: Time-Cost Trade-off, Crashing, Resource loading and Leveling. Project control and evaluation: Project Control and Evaluation Mechanisms, Project Time and Cost Overruns, Schedule / cost / Time / Resource variation over time. Interaction with an experienced project expert from industry: Sharing of the practical do's/ don'ts and other learnings. Project ethics and contractor management. Project failure prevention: Causes of Project success & Failure, failure preventive measures, Case Studies Relating to Successful and Unsuccessful projects.

MEL617-IP Manufacturing Economics and Costing**(4 credits)**

Manufacturing Economics- Introduction to manufacturing economics, principle and use of economic analysis, Estimating procedure, Methods of evaluation, Long and short term consequences, Capital budgeting, Replacement analysis, Decision making, Econometrics, Analysis of cost, Fixed cost, variable cost; Cash Flow Introduction to Cash flows, Depreciation, Methods of depreciation, Discounted cash flows, Cost Benefit Analysis, Activity based costing and traditional cost allocation structure; Performance analysis- Analysing performance by cost, Labor costing, Materials costing, Equipment and Tooling cost estimation, Evaluation of investment alternatives, Target costing, Case studies on cost estimation from manufacturing industries.

Practical (Pn): Practical will consist of case studies and problem solving related to budgeting, replacement analysis, costing (labor, performance, equipment), cost benefit analysis. Case study on Capital budgeting, Case study on Replacement analysis, Case study on Decision making, Case study on Analysis of cost, Fixed cost, variable cost, Case study on Depreciation, Case study on Cost Benefit Analysis, Case study on Activity based costing, Case study on performance by cost, Case study on Labor costing, Materials costing, Case study on Equipment and Tooling cost estimation, Case study on Evaluation of investment alternatives, Target costing,

MEL617 Composite Materials**(4 credits)**

Introduction: Definitions, History of Fibre Reinforced Composite, Constituent materials, Lamina and laminates, FRP, Properties & applications. Manufacturing of Composites: Using different moulding method. Micromechanical Analysis of Composite Strength and Stiffness: Introduction, Volume and weight fraction, Assumptions and limitations, Longitudinal strength and stiffness, Transverse modulus, Inplane shear modulus. Elastic Properties of the Unidirectional Lamina: Introduction, Stress-strain relationship, Stress-Strain relations of a thin lamina, Transformation of Stress, Strain & Elastic constants. Analysis of Laminated Composites: Laminates, Basic assumptions, Strain-Displacement Relationship, Stress-Strain relation, Equilibrium equations, Laminates stiffness, Determination of Lamina Stresses and Strains, Coupling effects, Types of Laminates configuration. Analytical Methods of Laminated Plate: Introduction, CLPT, Bending of Rectangular Plate, Shear deformation in laminated plates. Hygrothermal Effects in Laminates & Failure of composites: Introduction, Effect of Hygrothermal Forces on Mechanical behaviour, Micromechanics of Hygrothermal properties, Hygrothermoelastic Stress-Strain relations, Residual

Stresses.

Practical (Pn): 1. To show video related to application of composite. 2. Explain the different manufacturing process of composite materials. 3. To find out the different parameter related to strength/ stiffness. 4. To find out the different stress and strain in composite. 5. Case study of lamina orientation in composite materials. 6. Case study related to CLPT. 6. Analytical analysis of Bending of rectangular plate. 7. Case study of hygrothermal effects on composites material. 8. Numerical analysis of failure of composites.

MEL621 Analysis of IC Engine Systems

(4 credits)

Recapitulation of fundamentals: Engines types, operation, performance parameters, air cycles, fuel injection systems, lubrication and cooling; Engine modeling: modeling of processes in SI and CI; Combustion: Combustion in SI and CI engines: Pressure vs crank angle diagrams, heat release rate, rate of pressure rise, mass fraction burned, and temperature profiles; Engine design for best performance and low emissions; Meeting present and future emission legislation; Engine testing: Instruments and operation, performance, emission measurement and analysis.

MEL625-MD Vibration & Noise Engineering

(4 credits)

Fundamentals of vibration; Vibration of single DOF systems: free vibrations, damped vibrations, forced vibration; Vibration of multi-DOF systems; Determination of natural frequencies and mode shapes: Dunkerley's formula, Rayleigh's method, Lagrange's equation, Holzer's method, Standard Eigen value problem, Continuous systems; Methods of vibration control: design of vibration isolators, auxiliary mass systems including tuned & untuned dampers for vibration control; Experimental methods for vibration testing. Fundamentals of noise; Noise sources; Noise level measurement, instrumentation and test techniques; Noise in vehicles, structural noise etc.; Control measures using mufflers, barriers, enclosures, vibration & noise reduction by active control etc.

MEL627 Mechatronics

(4 credits)

Introduction to mechatronic systems and their components, Integrated design issues in Mechatronics Design Process and its factors and its key elements, Conceptual design, Possible design solutions for Mechatronics systems, Traditional approach vs. Mechatronics approach,

Choice of sensors and actuators for any Mechatronics application, Smart sensors, Field buses, Logic gates, Programmable Logic Controllers and its programming, Selection of PLC for any application.

MEL630-IP - Fundamentals of Supply Chain Management

(3-0-2) 4 credits

Concepts, Structure, and Overview; Importance of SCM and Enablers; Supply chain Performance in Indian Context; Types of Supply Chains; Improving the Supply chain performance; Analysis and Material Flow through Supply Chain; Managing Information flow in Supply Chains; Supply chain Integration strategies; Supply Chain Restructuring; Restructuring of Supply Chain Architecture; Introduction to Agile Supply Chains; Introduction to Green/Reverse Supply Chain; Services and SCM; Role of IT in SCM.

MEL677-IP Optimization Techniques

(4 credits)

Introduction and Basic Concepts:- Historical Development; Engineering applications of Optimization; Art of Modeling, Objective function; Constraints and Constraint surface; Formulation of design problems as mathematical programming problems; Classification of optimization problems; Optimization techniques; Functions of single and two variables; Global Optimum; Convexity and concavity of functions of one and two variables; Optimization of function of one variable and multiple variables; Gradient vectors; Optimization of function of multiple variables subject to equality constraints; Lagrangian function; Optimization of function of multiple variables subject to equality constraints; Hessian matrix formulation; Eigen values; Standard form of linear programming (LP) problem; Canonical form of LP problem; Assumptions in LP Models; Elementary operations; Graphical method for two variable optimization problem; Examples; Motivation of simplex method, Simplex algorithm and construction of simplex tableau; Simplex criterion; Minimization versus maximization problems; Revised simplex method; Duality in LP; Primal dual relations; Dual Simplex; Use of software for solving linear optimization problems using graphical and simplex methods; Examples for transportation, structural and other optimization problems; Sequential optimization; Representation of multistage decision process; Types of multistage decision problems; Concept of sub optimization and the principle of optimality; Problem formulation and application in Design of continuous beam and Optimal geometric layout of a truss; Water allocation as a sequential process; Capacity expansion and Reservoir operation; Integer linear programming; Concept of cutting plane method; Mixed

integer programming; Solution algorithms; Examples; Piecewise linear approximation of a nonlinear function; Multi objective optimization – Weighted and constrained methods; Multi level optimization; Direct and indirect search methods; Evolutionary algorithms for optimization and search; Applications in Robotics.

MEP110 Engineering Graphics and Drawing

(1-0-4) 3 credits

Brief overview of Types and use of lines and lettering; dimensioning; first and third angle systems of orthographic projection; projection of points in different quadrants; projection of lines; projection of planes; SolidWorks software for 2D and 3D modelling, isometric projections, drawings and assemblies.

MES501 Community Service

Community Service (MES501) is a non-credit course designed to foster a sense of social responsibility and community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

MES502 Community Service

Community Service (MES502) is a 2-credit course designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure. This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

MES601 Community Service

Community Service (MES601) is a non-credit course designed to foster a sense of social responsibility and community engagement among students. To successfully pass this course, students must complete a minimum of 70 hours of community service. This can be accomplished during the summer or winter break periods, as per the Standard Operating Procedure.

MES602 Community Service

Community Service (MES602) is a 2-credit course

designed to engage students in meaningful community service activities. Students are required to complete a minimum of 140 hours of community service in the year including 70 hours completed in the previous semester, which can be fulfilled during the summer or winter break periods as per the Standard Operating Procedure (SOP). This course aims to develop students' sense of social responsibility, community engagement, and personal growth through active participation in various service projects.

MEV502 Skill based course

(3)

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. This will be a specialized course chosen as per the need of the industry, with more emphasis on hands-on practice.

MET502 Industrial Internship

(7)

This is a bridge course to be done by students in summer, who opt for 1 year exit for PG Diploma. Students need to undergo an industrial internship in the domain of their choice.

MSL101 Media Communication Concepts

(3-0-0) 3 Credits

Sound Engineering is an important aspect of the Media industry; therefore, this course introduces students to the basics of Media. Basic Media concepts, communication concepts, and media theories are important aspects of the Media world; therefore, this course emphasises the basics of media. Students are introduced to the basics of the communication process, which helps them understand the communication process and how it is related to other media fields like visual, sound, film, and games, among others. The course also introduces students to media theories and their implementation in various media fields. The course also gives students insight into various media fields like print, radio, journalism, films, games, and VFX.

MSL102 Media Technology

(4-0-0) 4 Credits

The Media Technology course encompasses the study of various media forms such as television, radio, the internet, and digital media. It is a multidisciplinary course that combines technical skills with theoretical knowledge to prepare students for careers in media production,

media management, and media research. The Media Technology course is designed to equip students with the skills and knowledge needed to produce high-quality media content using advanced technologies. It covers a range of topics such as photography, sound, and filmmaking and imparts knowledge about basic software like Photoshop, Audacity, and Adobe Premiere Pro. Students learn how to use different media production tools and software, how to analyse media content, and how to manage media projects from start to finish. The Media Technology course provides students with a unique blend of technical skills and theoretical knowledge that is essential for success in the media industry.

MSL103 Computer Architecture & Organization

(3-0-0) 3 Credits

The Computer Architecture & Organization subject in BCA is designed to provide students with a comprehensive understanding of the design and organisation of computer systems. Students learn about the various components of a computer system, their functions, and how they work together to execute instructions. They also learn about the various techniques used to improve the performance of computer systems.

MSL104 Data Structures

(1-1-0) 2 Credits

This subject is designed to provide students with a solid foundation in organising and managing data efficiently. Students learn about the various data structures and their applications in solving real-world problems. They also learn about the various algorithms used for sorting and searching data. The subject is aimed at preparing students for careers in software development, database management, and other related fields.

MSL201 Production Pipeline for Game and VFX

(2-1-0) 3 Credits

This course is designed to provide students with the knowledge required to create high-quality video games and visual effects for film, television, and other media. Students learn about the various stages of the production pipeline, including pre-production, asset creation, animation, lighting and rendering, and post-production.

MSL202 Data Communication & Computer Networks

(1-1-0) 2 Credits

This course is designed to provide students with the knowledge and skills required to understand how communication networks work and how data is transmitted over these networks. Students learn about the different network models, devices, and protocols, as well as network security, transmission media, network applications, and network management. The subject is aimed at preparing students for careers in networking, telecommunications, and related fields.

MSL203 Numerical Techniques and Optimization Methods

(2-0-0) 2 Credits

This course is designed to provide students with the knowledge and skills required to solve mathematical problems and optimise various functions using numerical techniques. Students learn about the basics of numerical techniques, optimisation methods, numerical linear algebra, numerical methods for differential equations, and applications of numerical techniques. The subject is aimed at preparing students for careers in fields such as engineering, finance, and data science.

MSL204 Tools and Techniques Used in Game & VFX - I

(3-0-0) 3 Credits

This course is designed to provide students with a foundational understanding of the tools and techniques used in-game and visual effects production. Students Understand about 3D modelling, texturing and shading, lighting and rendering, animation, visual effects, and game engine basics.

MSL205 Render management

(2-0-0) 2 Credits

This course is designed to provide students with a comprehensive understanding of the rendering process for animation and visual effects. Students learn about different aspects of render farm management, render pipeline management, render optimisation, workflow integration, and render farm security. The course is aimed at preparing students for careers in render management, pipeline management, and workflow integration in the animation and visual effects industry.

MSL301 Media Laws and Ethics

(3-0-0) 3 Credits

A media laws and ethics course is designed to provide students with the knowledge and skills necessary to operate within the legal and ethical framework of the media industry. Media laws and ethics are crucial components of the media industry. The media industry has a significant impact on society, and the media must operate within the legal and ethical framework. Media laws and ethics courses cover a wide range of topics, including freedom of expression, defamation, contempt of court, privacy laws, copyright and trademark laws, and other relevant laws and regulations that govern the media industry. These courses also cover ethical considerations in journalism, sound, filmmaking, photography, games, and VFX, including objectivity, fairness, accuracy, and accountability. The course aims to equip students with an understanding of the legal and ethical principles that underpin the media industry in India.

MSL302 Research Techniques

(4-0-0) 4 Credits

Research techniques play an essential role in the media industry, allowing professionals to gather information, analyse it, and create compelling content. Research techniques play a critical role in the media industry. They provide valuable insights into audience preferences, opinions, and behaviours, which can be used to create more engaging and relevant content. Whether through surveys, content analysis, focus groups, interviews, or observational research, media professionals have a range of research techniques at their disposal to help them better understand their audience and create content that resonates with them. The research process is well defined in the course required for the media industry. Be it creating a song/sound, creating a movie, or working on visuals. These research techniques courses help students to understand the groundwork required for the same.

MSL303 Artificial Intelligence

(2-1-0) 3 Credits

This course is designed to provide students with a broad understanding of AI concepts, techniques, and applications. Students learn about different AI techniques, such as search and optimisation, machine learning, natural language processing, and computer vision, and how these techniques are used in various domains. The course is aimed at preparing students for careers in AI research, AI development, and AI consulting.

MSL304 Game Testing

(2-0-0) 2 Credits

The objective of this course is to equip students with the knowledge and expertise required to execute and oversee testing procedures at all stages of game development. It encompasses fundamental principles of video and game testing and guides on assessing risks and setting objectives for gaming software.

MSP101 Programming using C

(2-0-4) 4 Credits

The Programming using C subject in BCA is designed to equip students with the necessary programming skills required to develop computer applications. Students learn to write efficient and optimized programmes using C programming language and also learn the basics of object-oriented programming, data structures, and file handling.

MSP102 Programming using C++

(1-0-4) 3 Credits

This subject is designed to equip students with advanced programming skills required to develop complex software applications. Students learn to write efficient and optimized programmes using C++ programming language and learn the basics of object-oriented programming, data structures, etc. The subject is aimed at preparing students for careers in software development, game development, and other related fields.

MSP103 Introduction to Linux

(1-0-4) 3 Credits

The Introduction to Linux subject in BCA is designed to provide students with a solid foundation in Linux operating systems. Students learn about the basics of Linux commands, shell scripting, system administration, and security. The subject is aimed at preparing students for careers in Linux system administration and development.

MSP104 Programming in Java

(1-0-4) 3 Credits

This course is designed to equip students with the advanced programming skills required to develop complex software applications using Java programming language. Students learn to write efficient and optimized programmes using Java and also learn the basics of

object-oriented programming, exception handling, collections framework, and GUI programming. The subject is aimed at preparing students for careers in software development, web development, and other related fields.

MSP106 Database Management System

(1-0-2) 2 Credits

This course is designed to provide students with a solid foundation in designing, implementing, and managing database systems. Students learn about the principles of database design and normalization, SQL programming, database administration, and security. The subject is aimed at preparing students for careers in database management, data analysis, and other related fields.

MSP201 Programming in Python

(2-0-2) 3 Credits

This course is designed to equip students with the advanced programming skills required to develop complex software applications using Python programming language. Students learn to write efficient and optimized programmes using Python and also learn the basics of data types, functions and modules, file handling, object-oriented programming, and control structures. The subject is aimed at preparing students for careers in software development, web development, data analysis, and other related fields.

MSP202 Advanced Python Lab

(2-0-2) 3 Credits

This course is designed to provide students with a deeper understanding of Python programming and how to use it to solve complex problems. The lab covers topics such as OOP, advanced data structures, GUI programming, web scraping, machine learning, data visualization, and concurrent programming. The lab is aimed at preparing students for careers in software development, data analysis, and related fields.

MSP204 VFX Production Process

(1-0-2) 2 Credits

This course is designed to provide students with hands-on practice with the tools and techniques used in the visual effects production process. Students will be introduced to software used in VFX, such as Maya, After Effects, etc.

MSP301 Advanced Java Lab

(2-0-2) 3 Credits

This course is designed to provide students with an in-depth understanding of advanced Java concepts and features. Students learn how to create more efficient, reusable, and scalable code using object-oriented principles, data structures, concurrency, and advanced Java topics. The course is aimed at preparing students for careers in Java development, software engineering, and enterprise application development.

MSP302 Major Project

(0-0-12) 6 Credits

The Major Project is a comprehensive and complex project that requires students to apply their theoretical knowledge and practical skills to develop a complete software application or system. The Major Project is usually completed in the final year of the course, and it is a culmination of the knowledge and skills gained throughout the course. Through the project, students learn about project planning, development, testing, documentation, and presentation, which are essential skills for a successful career in software development.

MSP303 Game production process

(1-0-4) 3 Credits

This course is designed to provide students with hands-on practice with the tools and techniques used in the Game Development production process. Students will be introduced to software used in the game industry, such as Maya, Unity, Unreal, etc.

MSP304 Rotopaint

(1-0-4) 3 Credits

This course is designed to provide students with a comprehensive understanding of the rotoscoping and painting techniques used in film and television production. Students learn about basic and advanced rotoscoping techniques, paint techniques, stereoscopic RotoPaint, and different types of workflows used in the industry. The course is aimed at preparing students for careers in film and television production as rotoscoping and paint artists.

MSP307 Creating Database Application

(1-0-4) 3 Credits

This course is designed to provide students with a foundational understanding of designing databases for

applications. The course is aimed at preparing students to understand how the data is being saved and used by applications for various purposes.

MST102 Software Engineering

(2-0-0) 2 Credits

This course is designed to provide students with a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software, that is, the application of engineering to software, which helps them understand the overall software development life cycle.

PCC502 Research Seminar

2 Credits (0-0-4)

Independent study on any recent research fields. Students are evaluated on individual basis on the parameters like content of the topic, delivery, presentation techniques and viva-voce.

PCD201 Minor Project

4 Credits (0-0-8)

The minor and major research project courses allow students to delve into a specific area of interest within the field of psychology. It provides the students the opportunity to engage in the research process from conception to dissemination under the guidance of a faculty member or a mentor. Students begin by identifying a research question or hypothesis, conducting a literature review to ground their inquiry in existing knowledge, and designing a study to address their research question. This process involves selecting appropriate methodologies, such as experiments, surveys, or observational studies, and considering ethical implications. Following the design phase, students collect and analyze data, using statistical software or qualitative analysis techniques as appropriate to their study's focus. The culmination of the course is the presentation of their findings, typically in the form of a written research report or paper.

PCD302 Major Project

6 Credits (0-0-12)

The minor and major research project courses allow students to delve into a specific area of interest within the field of psychology. It provides the students the opportunity to engage in the research process from conception to dissemination under the guidance of a faculty member or a mentor. Students begin by identifying a research question or hypothesis, conducting a literature

review to ground their inquiry in existing knowledge, and designing a study to address their research question. This process involves selecting appropriate methodologies, such as experiments, surveys, or observational studies, and considering ethical implications. Following the design phase, students collect and analyze data, using statistical software or qualitative analysis techniques as appropriate to their study's focus. The culmination of the course is the presentation of their findings, typically in the form of a written research report or paper.

PCD601 Dissertation-I

4 Credits (0-0-8)

Implementation of new or recent psychological research under the guidance of a faculty. Students are expected to complete the formulation of the research problem, literature survey, methodology and the expected outcome of the study.

PCD602 Dissertation-II

8 Credits (0-0-16)

Completion of the research work and dissertation report submission which was undertaken as PCD601, Implementation of new or recent psychological research under the guidance of a faculty. Students are expected to complete the formulation of the research problem, literature survey, methodology and the final results of the study.

PCL102 Psychology for Living

(2-1-0) 3 credits

The present course has been designed to encapsulate the major thrust areas in the discipline of psychology with focus on its relevance in everyday life. The course seeks to make a beginner student aware of their body image, intimacy, socialization process, and role of culture in themselves as mediated by the media. It also introduces the students to disintegrative experiences and ways of managing them, as well as to the process of self-growth and integration.

PCL103 Introduction to Psychology

3 Credits (3-0-0)

This course introduces students to the basic concepts of psychology with an emphasis on applications of psychology in everyday life. To give an overview of the development of this academic discipline. Introducing to the basic principles and methodologies and its study.

PCL104 Introduction to Social Psychology**4 Credits (2-2-0)**

Social psychology is the scientific study of the way people think about, feel, and behave in social situations. It involves understanding how people influence, and are influenced by, the others around them. A primary goal of this course is to introduce students to the perspectives, research methods, and empirical findings of social psychology. Topics to be covered include: social influence, social cognition, Interpersonal attraction, pro-social behaviour, aggression. Finally, throughout the course, emphasis will be placed on developing critical and integrative ways of thinking about theory and research in social psychology.

PCL105 Evolution of Psychological Thought**4 Credits (3-1-0)**

Adopting a critical lens, the course aims to explore the various viewpoints on consciousness from both Western and Eastern perspectives. The course provides an overview of the historical debates in the originating systems of thought that have contributed to the current Western approaches to psychology. Furthermore, the courses critically examine the crucial thinkers and the issues raised by post-modern thinkers about feminism and cultural paradigms.

PCL106 Positive Psychology**3 Credits (3-0-0)**

The main objective of this course is to provide an orientation to the students to the various aspects of positive psychology as opposed to traditional psychology and to move beyond the disease model. The course provide an opportunity to the students to explore the concepts of positive psychology constructs such as happiness, character strengths, self-efficacy, and creativity and introduce the ways positive psychology can be applied in real-world settings.

PCL108 Introduction to Physiological Psychology**4 Credits (3-1-0)**

The present course is designed to introduce students to the nature and methods of Physiological Psychology. It will help the students to understand the cellular and neural basis of behavior along with structure and functions of endocrine glands, brain and nervous system.

PCL111. Understanding Individual Differences**3 Credits (3-0-0)**

The course examines psychological features that contribute to differences and similarities in individuals. The course will review major theories, debates, and research findings in the fields of intelligence, personality traits, motivations, and emotions.

PCL113 Methods of Psychological Enquiry**4 Credits (3-1-0)**

Through this course students will be introduced to the types of research, sampling, types of assessments and Likert scales. They will also learn about measures of central tendency- mean, median, mode and normal curve formation. They will learn about the objectives, techniques, and designs in qualitative research. They will also gain insights into basic components of ethical practices - competence, confidentiality, integrity, and credibility.

PCL114 Statistical Methods**4 Credits (3-1-0)**

This course offers an introduction to descriptive and inferential statistics. It furthers with preliminary concepts like random sampling, understanding about variables and constants and explains various scales of measurements. The course will introduce parametric tests exploring the importance of t-test, z-score, f-score, and ANOVA. Students will also learn about non- parametric tests like Kruskal-Wallis and Mann-Whitney through this course.

PCL130 Introduction to Psychology**3 Credits (2-0-2)**

This course introduces students to the basic concepts of psychology with an emphasis on applications of psychology in everyday life. To give an overview of the development of this academic discipline. Introducing to the basic principles and methodologies and its study.

PCL130N Introduction to Psychology**4 Credits (3-1-0)**

This course introduces students to the basic concepts of psychology with an emphasis on applications of psychology in everyday life. To give an overview of the development of this academic discipline. Introducing to the basic principles and methodologies and its study.

PCL131 Health and Wellbeing**3 Credits (3-0-0)**

The course aims to provide students with a comprehensive understanding of the psychological factors that influence individual well-being and contribute to a healthy lifestyle. Through an exploration of various models, theories, and concepts related to health and well-being, students will gain insights into the intricate relationship between psychological processes and overall wellness. The course encompasses topics such as the bio-medical model, bio-psychosocial model, stress, coping strategies, health behaviors, addictive behaviors, and more. The course begins by examining the advantages and disadvantages of the bio-psychosocial model compared to the biomedical model. Students will gain an understanding of how these models shape our understanding of health and its determinants. Additionally, students will explore different models of healthy personality proposed by prominent psychologists such as Maslow, Fromm, Pearl, Vaillant, and Frankl. This exploration will deepen their comprehension of the principles and importance of holistic health.

PCL133 Introduction to Organizational Processes**3 Credits (3-0-0)**

This course is designed to provide students with an understanding of the individual, group, and human behavior in organizations. The focus is on providing an understanding of how organizations can be managed more effectively and enhancing the quality of employees' work life. Topics will include Organizational Behaviors, Diversity, Attitudes and Job Satisfaction, Personality, and Values, Perceptions, Decision Making, Motivation Concepts, Group Behavior, Communication, Leadership, and Conflict and Negotiation. Concepts associated with continuous improvements in individual and group processes are discussed to support the understanding of management and organizational behavior.

PCL201 Cultural Psychology**3 Credits (3-0-0)**

To understand the role of culture in understanding behaviour and exploring psychological insights in the Indian thought traditions. It includes Cultures; Psychic Unity and Cultural Relativity; Beyond Descriptions of Cultural Differences, Who am I and who are they? Culture and architecture; Representation: Person, Other People, Self and of Groups, The Making and Remaking of Cultures: A Developmental Perspective: Family and children, models of the family, self-construal and developmental pathways, Intercultural Contacts and Indigenous Psychology.

PCL202 Industrial and Organizational Behaviour**4 Credits (3-1-0)**

The present course is designed to study the workplace environment, organization, and their employees. This course will introduce students to history of industrial Psychology and Organizational behaviour, its current status in India. Studying this would enhance the student's concern for increasing productivity and at the same time maximizing the performance of an organization as a whole. It has been designed to provide the student a detailed knowledge about the role psychology plays in managing organizational resources, at the same time focusing on the employee behavioural part.

PCL206 Counselling Psychology**4 Credits (3-1-0)**

The students will be taught the various phases and stages of the counselling process and learn the relevance of assessment in assisting the counselling process. This paper provides an in-depth overview of the dominant theoretical, empirical trends, and perspectives in the field of counselling psychology. The students will be exposed to the definition, scope, and goals of Counselling. The students will also be able to differentiate between Counselling, guidance, and psychotherapy and understand its implication according to the etiology of the client. The course will help students appreciate and develop the essentials of counselling skills and relationship building. The students will be exposed to different types of counselling setups, particularly behavioural and academic issues and Family counselling.

PCL210 Adapting and Thriving Through Emotional Intelligence**3 Credits (3-0-0)**

This emotional intelligence course will help student's better sense and respond to their own emotions and the emotions of others. This course focuses on the five core competencies of emotional intelligence: self-awareness, self-regulation, motivation empathy, and interpersonal skills.

PCL211 Introduction to Developmental Psychology**4 Credits (3-1-0)**

The present course aims to help the students understand the major theoretical perspectives and methodological approaches used in Developmental Psychology. It allows the students to identify various milestones in diverse

domains of human development across life stages. Moreover, it helps them to understand the contributions of socio-cultural factors involved in shaping human development, especially in the Indian context.

PCL212 Introduction to Cognitive Psychology

4 Credits (3-1-0)

The course aspires to provide an in-depth understanding of some of the cognitive processes in terms of current theories, models and applications to the students. Additionally, to help learners understand the importance of these cognitive processes in everyday life.

PCL214 Introduction to Abnormal Psychology

4 Credits (3-1-0)

Students will critically engage with the concept of normalcy and abnormality and its understanding in various cultures. The students will be exposed to theoretical and clinical perspectives relevant to the study of psychopathology such as the Diathesis-Stress-Model. Emphasis is placed on terminology, classification, etiology of the major disorders: anxiety based disorder, OCD, and phobia, dissociative disorder, clinical picture of personality disorders (Oppositional defiant disorder, and conduct disorders), Childhood developmental disorder (Mental Retardation, Pervasive developmental disorder, Autism, ADHD), Gender identity disorder and Paraphilia, and substance abuse and addictive disorders.

PCL215 Qualitative Methods in Psychology

4 Credits (3-1-0)

This course introduces students to the basic principles of research methods in Psychology. The focus of the course is on students learning how to do research in Psychology, with an emphasis on student-centred activities and problem solving. Students will learn about such key concepts as the scientific method; operationalizing constructs; independent and dependent variables; data types and ways of measurement; confounding variables; experimental and non-experimental design; questionnaire construction; developing and testing hypotheses; descriptive statistics and describing data graphically; and the ethics of research.

PCL217 Creative Thinking and Academic Writing

2 Credits (1-0-2)

The Creative Thinking and Academic Writing course is designed to enhance undergraduate psychology students' ability to think critically, creatively, and

expressively while developing their academic writing skills.

PCL231 Art and Color Therapy

3 Credits (3-0-0)

Through this course, the students will gain a solid understanding of the principles and practices of art therapy, including history, theories, and techniques. They will learn about the psychological effects of different colors and how colors can be used to evoke emotions and promote healing. Students will also develop practical skills in using art and color as therapeutic tools, including techniques for facilitating artistic expression and interpreting artwork. The course will also focus on the cultural competence to develop an awareness about how art and color are used in different cultures and how cultural factors can influence the therapeutic process.

PCL233 Disability Studies

3 Credits (3-0-0)

This course will introduce students to different theoretical and methodological approaches to studying disability within the Humanities and Social Sciences, as well as to the prominent debates within the field. The study of disability within disciplines such as history, sociology, anthropology, English, political science, and geography has been of increasing interest to academic scholars. This course will provide an overview of the relatively new field of Disability Studies, enabling students to think critically about conventional conceptualizations of disability and normality of body and mind. Through the exploration of these perspectives, the students will be asked to engage with concepts such as subjectivity and theories of disability and issues related to childhood, care, gender and culture. It also places disability in exploring changes and continuities in the ways in which people have thought about concepts in law, and in policy.

PCL304 Youth, Gender and Identity

4 Credits (3-1-0)

The main objectives of this course are to enable students to understand the concept of youth, gender and identity; to elaborate the issues concerning youth and sexuality; to explain the relationship between youth, gender and identity in Indian context; to critically analyse the role of culture in identity formation; to discuss the concept of multiple identities; to explain the important role of family, peer group, school and media in identity formation; to develop self-esteem and self-

concept; to examine the risk behaviour among youth; to encourage positive youth development; to analyse the influence of globalization on gender and youth identity. To study coping mechanisms related to identity crisis due to faulty formation of self- concept.

PCL305 Community Psychology

4 Credits (3-1-0)

Students will acquire an advanced understanding of relevant concepts, issues, and work methods in community psychology. This includes change processes at the community level, locally based intervention methods, and methods for evaluating implemented actions.

PCL306 Contemporary Psychological Perspectives

4 Credits (3-1-0)

Contemporary psychological perspectives is a cohort of introduction to four major streams of psychology i.e., sports, forensic, geriatric, and crisis management. Under the contemporary psychological purview of sports psychology, the students will gain insight about psychological and mental factors that influence and are influenced by participation in sports, exercise, and physical activity. Introduction to Forensic Psychology is multidimensional, demonstrating how to analyze psychological knowledge and research findings and apply these findings to the civil and criminal justice systems. This course will introduce students to research-based forensic practice and application which they will utilize to define and explore forensic psychology. Students will learn the meaning, scope, and significance of Geriatric care among the elderly along with the problems of the elderly- Physical, Psychological, Economic, Emotional & Social problems. Geriatric giants- immobility, instability, incontinence, and impaired intellect/memory. Impaired vision and hearing loss. Through crisis management in psychology the students will learn how people process information differently during a crisis, the mental states, and behaviours that need to emerge in crisis.

PCL310 Self in the New World

3 Credits (3-0-0)

In this course, students will develop a deeper understanding of their Self, including their values, beliefs, emotions, and behaviors, which can enhance their personal and professional growth.

PCL333 Therapeutic Interventions

3 Credits (3-0-0)

This course will cover a broad range of theory and practice related to mental health care. The course will focus on Indian as well as western therapy techniques as well as the most commonly used theoretical approaches used. Clinical conceptualization, diagnosis, treatment planning, and issues/needs related to providing culturally sensitive, inclusive, and competent treatment will be covered. This course aims to achieve the goal like describing the major theoretical approaches to psychotherapy, identifying common counseling related problems/issues confronting the client, demonstrating competence in the assessment and clinical treatment of commonly encountered mental health issues.

PCL334 Sustainability and Conservation Behaviour

3 Credits (3-0-0)

Conservation behaviour is becoming an increasingly important concept as natural resource managers, development officers, educators, politicians, regulators, and business leaders consider what it takes to push people toward sustainable behaviours. The present course is designed to introduce to students the concept of conservation behaviour and the environmental problems faced. Students will understand how habit formation and change affects management decisions and provide insight to environmental values.

PCL336 Advertising and Media Psychology

3 Credits (3-0-0)

This course offers an understanding of basic concepts, developments, issues and debates in the field of advertising and media psychology. This course will help students appreciate principal theories and processes of media use and its effects. The students will understand the effects of media on children and adolescence periods. The students will also learn to critically analyze the representation of different social groups in media. Also, help students understand the psychological effects of media and its violence.

PCL337 Stress Management, Coping and Life Adjustment

3 Credits (3-0-0)

Students will gain a comprehensive understanding of stress, including its causes, effects on health, and the different ways it can manifest in individuals. They will learn a variety of coping strategies for managing stress,

including problem-focused coping, emotion-focused coping, and meaning-focused coping.

PCL509 Paradigms in Psychology

4 Credits (3-1-0)

This course offers an understanding of set of theories across the different paradigms in psychology. The paradigms i.e., Individual Constructivism, Positivism, Post-colonial philosophical debates of psychology will be discussed in thorough detail. Kurt Danziger's analysis of history of psychological research methodology will be studied in this course along with Danziger's account on social dynamics of psychological methodology.

PCL511 Behavioral Science and People Analytics

4 Credits (3-1-0)

This course is a cohort of theories and concepts of behavioural sciences and people analytics. Through this course the students will gain insights into the behavioural science approach concerning the impact of climatic changes and habit formations, adaptability, breaking the habitual patterns, decision making, concepts of self in the changing world; and people analytics approach through analytic cycle, data preparation, code development, textual data analysis, participatory action analysis, and talent acquisition. This course also includes behavioral aspects of substance and drug abuse.

PCL512 Culture and Psychology

4 Credits (3-1-0)

The course is aimed to develop students' competencies and interest in culture and psychology field. After fulfilling the course, students will know basic approaches of modern cross-cultural psychology and their implementation in different areas of their everyday activity in multicultural settings. During the course students get acquainted with what cross-cultural psychology is, how it differs from other related spheres of psychology and how it can be applied to scientific and real-life situations. Students will learn how to measure and map different cultures and understand culture's impact on cognition, personality and communication. Students will study the factors and outcomes of successful acculturation and intercultural relations. Students will also train to create convincing presentations, write a theoretical review and work with some practical exercises.

PCL513 Advanced Research Methodology

4 Credits (3-1-0)

This course delves into advanced techniques and methodologies used in psychological research. It aims to equip learners with the skills necessary to design, execute, and analyze research studies in the field of psychology. Through a combination of theoretical instruction and hands-on practice, students will gain a deep understanding of various research methods and their applications in psychological inquiry.

PCL514 Workplace Communication

4 Credits (3-1-0)

This course is intended to provide future psychologists with the communication skills necessary for professional success in a variety of organizational settings. The students will learn about workplace communication types, skills needed for effective communication, the impact communication can have on perception, and how it can help overcome challenges. This course focuses on practical strategies for effective interpersonal and group communication, such as conflict resolution, negotiation, and persuasive techniques. Students will investigate the psychological foundations of communication, such as emotional intelligence and social perception, which are critical in developing relationships and influencing others in the workplace.

PCL531 Human Growth and Development

3 Credits (3-0-0)

The programme offers an interdisciplinary approach to understand individual and family development across the lifespan by facilitating the students to have advanced theoretical knowledge, practical and research skills as well as to develop professional and entrepreneurial skills related to various fields of Human Development like Early childhood education, Children with special needs, Geriatric care, Assessment of Child Development and Problem behaviours, Guidance and Counseling services, Child and Family welfare programmes, so that students would be proficient enough to address issues and concerns of individual, family and community. A hallmark of the programme is to provide students with hands-on opportunities to use the knowledge and skills gained in the classroom in professional work settings during the study period. The programme also permits students to carry out the research studies so that students get to analyze and constructively address contemporary issues faced by diverse children, youth, families, and communities. As an applied subject, it is focused on family life, parenting, parent-child relationship, family stress, coping and adaptation, mental health across the life span help students how they can deal with sensitive

situations and strengthen relationship and behaviours in their life.

PCL532 Psychopathology

3 Credits (3-0-0)

This course is designed to provide students an introduction to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders to facilitate development of the basic mechanics of making psychological diagnoses. Additionally, this course will provide students an overview of presumed etiology and treatment of various psychological disorders. This information is crucial to helping clinicians recognize and appreciate how psychopathology may develop, is maintained, and responds to treatment. Recognizing variables associated with the onset and maintenance of psychological disorders may also help students differentiate amongst various psychological disorders such as Sexual Dysfunction Disorders, Feeding and Eating Disorders, Elimination Disorders, and Personality Disorders.

PCL533 Psychological Disorders in Contemporary World

3 Credits (3-0-0)

This course provides an extensive knowledge and insight into the new age psychological disorders that have been added, modified and classified in the DSM-5-TR. Through this course students will learn about new-age addictions and their respective interventions such as Prolonged grief disorder, premenstrual dysphoric disorder, OCD-Hoarding, Excoriation and Trichotillomania, Pyromania, Kleptomania, Intermittent Explosive Disorders, Gambling Disorder, and conditions and problems that may be a focus of clinical attention such as suicidal and non-suicidal behaviors, abuse and neglect, relationship problems etc.. The students provided a framework for assessing information about cultural features of an individual's mental health problem and how it relates to a social and cultural context and history.

PCL534 Psychodiagnostics

3 Credits (3-0-0)

This course is designed to equip students with the theoretical knowledge and practical skills necessary for the assessment and understanding of psychological functioning. This course provides a comprehensive overview of the principles, methods, and tools utilized in the assessment of individuals across various stages of life, from childhood to adulthood. Topics covered include the history and development of psychodiagnostics,

assessment principles, psychometric properties, ethical considerations, and cultural factors influencing assessment practices. Students will learn about various assessment techniques, including interviews, observations, psychological tests, and self-report measures such as Halstead Reitan Neuropsychological battery, AIIMS Neuropsychological Battery, Luria Nebraska Neuropsychological Battery, Tests of Cognitive Functions and Projective Techniques.

PCL535 Organizational Psychology: Know your Employees

3 Credits (3-0-0)

This course covers the theory, methods, findings, and applications of organisational psychology. This course covers the psychological foundations of work behaviour and organisational practices for aligning employees' characteristics with workplace demands. Topics will cover job analysis, personnel selection, placement, training, motivation, job satisfaction, leadership, teamwork, organisational culture, and work-life balance. Through a blend of theory and practical application, this course explores key psychological concepts and how they influence individual and group dynamics in an organizational setting. By the end of this course, attendees will be equipped with the tools and knowledge to create more effective, adaptive, and supportive workplaces.

PCL536 HR Practices at Workplace

3 Credits (3-0-0)

This course introduces students to the historical perspective of HR practices, roles and responsibilities of HR professionals, and foundational strategies for designing effective HR activities. This course covers a variety of HR functions, such as recruitment, training, performance appraisal, and employee welfare, with a focus on how psychological insights can improve these processes. Students will investigate the impact of organizational behavior on human resource strategies and learn how to create interventions that improve employee satisfaction and retention. By the end of the course, students will have the fundamental HR skills required to contribute effectively in dynamic work environments.

PCL537 Industrial Psychology and Employee Relations

3 Credits (3-0-0)

This Industrial Psychology and Employee Relations course will give students a thorough understanding of

labour and industrial relations (IR). Industrial relations is concerned with the maintenance of the employment relationship, specifically how trade unions and management interact in an organisation. This course will help students in understanding the intricate relationship between industrial psychology theories and practical employee relations. This course delves deeply into how psychological principles can improve workplace environments, labor relations, and organizational effectiveness. Students will learn strategies to improve the relationship between the employer and employee.

PCL538 New Age Leadership

3 Credits (3-0-0)

This course outlines the theoretical foundations of the concept of leadership through a comprehensive review of leadership theories, allowing students to understand what it takes to influence and empower others. This course introduces students to contemporary leadership theories and practices, focusing on emotional intelligence, adaptability, and ethical decision-making. Students will look into how psychological insights can inform effective leadership styles that resonate with diverse, multicultural teams and align with changing organizational goals. This course will provide students with a nuanced understanding of what it means to be a leader today, as well as how to motivate and manage teams to achieve exceptional results.

PCL539 Educational Psychology

3 Credits (3-0-0)

Educational Psychology focuses on the study of learning, instruction, and measurement across the life span. The learning and instruction emphasis applies the study of cognitive psychology to research on learning and instruction in applied settings like schools. The course of study provides a strong foundation in psychological theory, principles related to instructional applications, and quantitative methodology. The measurement emphasis applies cognitive psychology and theories of measurement to test design, instrument construction, scale analysis, and measurement theory. The Educational Psychology programme emphasizes the use of rigorous quantitative methodology in the scientific study of learning, instruction, and measurement in applied settings.

PCL540 Advance Health Psychology

3 Credits (3-0-0)

This course examines the relationships of social, biological, behavioural and cognitive variables to health. It covers those aspects of the social environment that influence

health and illness outcomes including interactions among family members and between healthcare consumers and healthcare providers. Risk factors for health-compromising behaviours are also discussed including strategies for their modification. Students are also educated about interprofessional practice and collaboration. Students will learn to demonstrate understanding of the biological, behavioural, cognitive and social determinants of health, and risk factors for health-compromising behaviours and strategies for their modification, across the lifespan. They will also learn to demonstrate advanced knowledge of individual, group and community-based approaches to the prevention and management of major identifiable health conditions (acute and chronic).

PCL541 Sports Psychology

3 Credits (3-0-0)

This course is designed to develop knowledge and understanding of the principles and applications of sport psychology and their applications to vocational and professional practices. It will provide an opportunity to critically assess a broad range of theories, methodologies and research findings in sport psychology. Through this course students will learn to develop a critical understanding of how to apply theories, strategies and methodologies in appropriate ways. Students will also learn to develop the appreciation of inter-related scientific concepts that promote understanding of problems and issues in the study of sport psychology.

PCL542 Forensic Psychology

3 Credits (3-0-0)

The curriculum is structured in a way that would expose students to the modern developments in the application of scientific methods in forensic psychology. The course aims to acquaint students with the investigative processes of the criminal justice system, build an understanding of the elements involved in crime and thereby employ the skills of forensic investigation from the psychological point of view. Forensic psychology is an interdisciplinary field with its specialty in professional psychology and primarily intends to provide psychological expertise in the legal and judicial system.

PCL603 Indian Knowledge Systems

4 Credits (3-1-0)

Through this course the students will embark on a journey through time and intellect as the hidden gems of Indian knowledge systems are unveiled. This

course includes knowledge of Self in the Indian Ancient Scriptures including the Vedic Corpus- the Samhitas, the Brahmanas, the Aranyakas, and The Upanishads. The course furthers with units that will explore the different schools of thought into the world of self-exploration, actualization, and realizations through conventional methods (yoga, meditation) and Indian therapeutic techniques. This course aims to bridge the gaps between contributions of the Indian Knowledge system and the Western Psychological world.

PCL604 Cognitive Neuroscience

4 Credits (3-1-0)

This course is designed to bridge the gap between undergraduate study and research in cognitive neuroscience, experimental psychology, and imaging methods. Students will learn to design, analyse, and evaluate neuroimaging experiments that contribute to their understanding of the brain mechanisms underpinning aspects of cognition and behavior such as memory, attention, object recognition, neuro-degeneration, and brain trauma. Students will also get an in-depth training in cognitive neuroscience research, introducing the principles of neuroimaging.

PCL605 AI and Human Behaviour

4 Credits (3-1-0)

This course explores how the versatile artificial intelligence (AI) can contribute to human intelligence and modify human behaviours in all the settings such as clinical, applied, and organizational. It examines how AI technologies, such as machine learning algorithms and natural language processing, can enhance human cognitive abilities, decision-making processes, stress management, and learning outcomes. Additionally, it discusses the potential impact of AI on human behaviours, including changes in social interactions, work patterns, and ethical considerations. By analysing various research studies and expert opinions, this course provides insights into the transformative role of AI in shaping human intelligence and behaviours.

PCL631 Clinical Psychology and Psychotherapies

3 Credits (3-0-0)

This course is designed to provide students with a comprehensive understanding of the theory, research, and practice of clinical psychology and psychotherapeutic interventions. This course integrates theoretical knowledge with practical skills to prepare students for professional roles in mental health settings. The course begins with an overview of the history and evolution of clinical psychology, including its theoretical

foundations and contributions to the understanding and treatment of psychological disorders. Students will examine various theoretical orientations, including psychodynamic, cognitive-behavioral, humanistic-existential, and systemic approaches, and their applications in psychotherapy. Emphasis will be placed on developing proficiency in conducting individual and group therapy sessions, utilizing therapeutic techniques such as cognitive restructuring, behavioral interventions, mindfulness-based approaches, and interpersonal therapy. Students will also explore the role of the therapeutic relationship, cultural competence, and ethical considerations in psychotherapeutic practice.

PCL632 Community Rehabilitation

3 Credits (3-0-0)

This course is designed to provide students with a comprehensive understanding of the principles, methods, and strategies involved in facilitating the rehabilitation and integration of individuals with disabilities into their communities. This course explores the multifaceted nature of rehabilitation within the context of diverse community settings and populations. The course begins by examining the conceptual frameworks and theoretical models that underpin community rehabilitation, including the International Classification of Functioning, Disability, and Health (ICF) and the social model of disability. Students will explore the impact of stigma, discrimination, and social barriers on individuals with disabilities, as well as the role of empowerment, advocacy, and social justice in promoting inclusion and equality. Topics covered include vocational rehabilitation, independent living skills training, assistive technology, accessibility modifications, community reintegration programmes, and peer support initiatives. Emphasis will be placed on fostering collaboration among interdisciplinary teams, including rehabilitation counselors, occupational therapists, physical therapists, social workers, and community organizers.

PCL633 Principles and Approaches of Counselling

3 Credits (3-0-0)

This course is designed to provide students with a comprehensive understanding of the theoretical principles, techniques, and ethical considerations involved in the practice of counselling. This course serves as an introduction to the field of counselling and prepares students for further study and professional practice in various counseling settings. Students will examine the historical development of counseling, theoretical frameworks, and the role of the counselor in facilitating positive change and growth in clients.

PCL634 Expressive Therapeutic Approaches

3 Credits (3-0-0)

This course is designed to provide students with a comprehensive understanding of various expressive modalities and their application in promoting psychological healing, self-discovery, and personal growth. The course covers a range of expressive modalities, including Art Therapy: Students will explore the use of visual art mediums, such as drawing, painting, sculpture, and collage, as tools for self-expression, emotional processing, and symbolic communication. Music Therapy: Students will examine the therapeutic use of music, including listening, improvisation, songwriting, and lyric analysis, to promote relaxation, emotional release, and cognitive stimulation. Drama Therapy: Students will learn about the use of improvisation, role-playing, storytelling, and psychodrama techniques to explore emotions, enhance interpersonal skills, and rehearse new behaviors. Dance/Movement Therapy: Students will explore the therapeutic potential of movement, dance, and body awareness exercises to facilitate emotional expression, embodiment, and integration. Poetry Therapy: Students will examine the use of written and spoken word, poetry, journaling, and narrative techniques to explore personal experiences, foster self-reflection, and cultivate resilience.

PCL635 Skills and Professional Ethics in Clinical Practice

3 Credits (3-0-0)

This course is designed to equip students with the essential clinical competencies and ethical frameworks necessary for effective and ethical practice in the field of mental health. Through a blend of theoretical instruction, experiential exercises, case studies, and supervised practice, students will develop proficiency in core clinical skills and ethical decision-making processes. Topics covered include professional codes of ethics, informed consent, confidentiality, boundaries, cultural competence, and ethical decision-making. Emphasis is placed on integrating ethical principles into clinical practice, fostering cultural humility, and promoting client welfare and autonomy. By the end of the course, students will have acquired the knowledge, attitudes, and skills needed to navigate complex ethical dilemmas, establish therapeutic alliances, and provide competent and ethical care to diverse client populations in clinical settings.

PCL636 Diversity, Inclusion and Equity

3 Credits (3-0-0)

This course is designed to increase students' awareness, knowledge, and understanding of fundamental concepts

such as race, class, gender, identity, difference, and intersectionality. It is designed to help students understand and cultivate inclusive environments within a variety of organisational structures. Students will be introduced to the fundamental concepts, frameworks, and theories that influence how leaders interpret diversity, equity, and inclusion personally and professionally, covering topics such as unconscious bias, cultural competence, and systemic inequalities. Students will learn how to promote equity and inclusion by applying evidence-based practices and psychological research to diverse workforce integration and conflict resolution.

PCL637 Deviant Behaviors at Workplace

3 Credits (3-0-0)

This course is designed to help students investigate the positive and negative effects of conforming and divergent behavior and the complexities of atypical and potentially harmful behaviors in organizational settings. They will learn how marginalizing factors such as gender, ethnicity, and disability influence these behaviors. This course investigates the psychological causes and consequences of deviant workplace behaviors such as theft, harassment, aggression, and unethical practices. Students will engage with psychological theories to better understand the motivations for such behaviors and their impact on organizational culture and morale. The course will also cover preventive strategies and intervention techniques for effectively managing and mitigating deviant behaviors, using a combination of theoretical learning and case analysis.

PCL638 Competency Mapping and Workplace Assessment

3 Credits (3-0-0)

This course is designed to help students learn the tools and techniques needed to evaluate and improve workforce capabilities within organizations. This course takes a detailed look at identifying key competencies required for various roles and how to align them with organizational goals and strategies. The course focuses on the practical application of competency mapping and workplace assessment in real-world settings, giving students the ability to conduct thorough needs analyses, create competency frameworks, and implement effective talent management and development programmes.

PCL639 Employee Engagement and Job Satisfaction

3 Credits (3-0-0)

This course is designed to help students understand

the factors that influence employee motivation and satisfaction in the workplace. It will help students understand the relationship between employee engagement and job satisfaction. This course looks at the psychological factors that influence high levels of engagement and satisfaction, such as job design, organisational culture and practices, leadership styles. Students will investigate various theories and models of motivation, engagement, and job satisfaction, and apply these concepts to case studies and real-world organisational scenarios.

PCL640 Applications of Positive Psychology

3 Credits (3-0-0)

This course offers practical skills in motivational interviewing, mindfulness, psycho-education, and group facilitation and gives students the tools to deliver evidence-based positive psychology approaches to individuals, groups, organizations, and communities. Students will gain knowledge about building positive relationships, virtues, inner strength and strategies for finding happiness. This course provides glimpses into the roots of positive psychology.

PCL641 Psychology in Disaster Management

3 Credits (3-0-0)

This course is designed to provide students with an understanding of how people react, behave or are affected in a disaster, critical incident or crisis. It is necessary for a future psychologist to understand, help and manage people in crisis or who are victims of trauma.

PCL642 Psychology of Social Justice

3 Credits (3-0-0)

This course concerns four major topics i.e., Immigration and Refugees, Caste systems, Religion, and Race in the Social Justice context. It addresses issues concerning ethnic communities, gender, racism, migration, policy, cultural identity and international relations. Students will gain insights about immigration laws, both international and domestic. The psychology of social justice paper recognizes that injustice is a global phenomenon that commands a global lens to our theoretical and empirical work. Hence, the programme provides a theoretical and methodological foundation for comprehending these issues within their legal, political, historical, and cultural contexts.

PCL643 Psychosocial Understanding of Gender

3 Credits (3-0-0)

The course provides an introduction to theories and research on sex and gender from a psychological perspective. The course covers a number of areas within psychology to show how sex and gender affects people in a number of areas during their lifetime. The course discusses societal debates in relation to the field. For example, the evolutionary versus socially constructed nature of sex/gender, binary versus fluid conceptualization of gender identity, and the influence of descriptive and normative gender stereotypes. The course has a social psychological orientation, but incorporates other psychological perspectives and gender theory (e.g., feminism and queer theory). The course provides knowledge of principles within scientific methods that contribute to theory and studies on sex and gender.

PCP101 Theory and Practice of Measurement (I)

2 Credits (0-0-4)

Through this course, the students will be introduced to the psychology lab, assessments, and tools utilized for psychometric assessments. This course will give students a practical exposure to the theoretical learnings concerning their ongoing core courses. Experiments like Müller-Lyer illusion, Koh's block, and Memory drum will be included in this level, along with psychometric assessments like Sentence Completion Test.

PCP102 Theory and Practice of Measurement (II)

2 Credits (0-0-4)

This course is an advancement for theory and practice I, in which students have hands-on experience with apparatus like Weight discrimination box and Tachistoscope. Through this course students will also be taught psychometric assessments, and they will learn to conduct the tests like Social Intelligence test and Family Environment scale. Students will be able to integrate theoretical knowledge with practical applications in psychology and will be able to apply psychological theories and concepts to analyze and explain real-world phenomena and behavior.

PCP203 Theory and Practice of Measurement (III)

2 Credits (0-0-4)

The present course is designed to introduce students to experiments and develop skill for conducting

psychological experiments that are useful in research and clinical practice.

PCP204 Theory and Practice of Measurement (IV)

2 Credits (0-0-4)

The present course is designed to introduce students to psychological testing and develop skills for conducting psychological assessment that is useful across multiple contexts such as clinical, counseling, recruitment and selection, and carrying out any research. The students will gain hands on experience in conducting psychological tests. They will also learn to interpret test scores to formulate reports.

PCP303 Theory and Practice of Measurement (V)

2 Credits (0-0-4)

The present practical course will equip the students to conduct surveys for psychological inquiry and research methods.

PCP501 Tools and Techniques of Professional Psychology-I

2 Credits (0-0-4)

This course is an interlink between theory and practice, in which students have hands-on experience with advanced psychometric assessments like TAT, Psychological Resilience Scale for Youth, Criminal Propensity Scale, and Organizational Culture Questionnaire. Students will be able to integrate theoretical knowledge with practical applications in psychology, and will be able to apply psychological theories and concepts to analyze and explain real-world phenomena and behavior.

PCP502 Tools and Techniques of Professional Psychology-II

2 Credits (0-0-4)

This course is an advancement of Tools and Techniques of Professional Psychology II, in which students have hands-on experience with advanced psychometric assessments like Sentence Completion, Job Anxiety, Loneliness Inventory, Anxiety, and Depression & Stress Scale. Students will be able to integrate theoretical knowledge with practical applications in psychology and will be able to apply psychological theories and concepts to analyze and explain real-world phenomena and behavior.

PCR101/102/201/202/301/302

General Proficiency

1 credit/each semester

General proficiency evaluation is conducted in each semester where a student will be evaluated for his achievements and participation in extra-curricular activities throughout four years and also for his academic excellence. The evaluation is based on academic performance, co-curricular activities in sports, cultural fest etc., social outreach, general awareness, soft skill development and outstanding achievements.

PCS101/102/201/202/301/302 Community Service

2 Credits/year

This course recognizes the need for giving back to the community and encourages students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University.

PCS501/502/601/602 Community Service

2 Credits/year

This course recognizes the need for giving back to the community and encourages students to participate actively in several outreach activities. A number of clubs, societies at NCU undertake several social responsibilities and conduct various donation drives, awareness seminars and street plays, blood donation camps, literacy programmes etc. Legal aid camps/clinics, projects for the upliftment and support of the underprivileged sections of the society and various energy and conservation-based initiatives are also undertaken at regular intervals. Community Service would be calculated through volunteer hours by all students of The NorthCap University.

PCT201/PCT301 Summer Internship I & II 4 Credits each

(0-0-8)

The summer internship is designed to offer practical experience in the field of psychology, complementing their academic studies. Typically spanning 6 to 8 weeks

during the summer break, this course provides students with the opportunity to apply theoretical knowledge to real-world situations, often in settings such as hospitals, clinics, research institutions, or community organizations.

PCT601 Summer Internship

4 Credits each (0-0-8)

The summer internship is designed to offer practical experience in the field of psychology, complementing their academic studies. Typically spanning 6 to 8 weeks during the summer break, this course provides students with the opportunity to apply theoretical knowledge to real-world situations, often in settings such as hospitals, clinics, research institutions, or community organization.

PYL150 Engineering Physics

(3-0-2) 4 credits

This course covers various concepts of engineering physics including Electromagnetics, Interference, Diffraction, Polarization, Laser, Fibre optics and Holography, Relativistic Mechanics, Quantum physics. Structure and Characterization of Materials.

PYL321-Nanotechnology- Principles and Applications:

4 Credit (3-0-2)

Introduction to Nanotechnology; Nano materials and how they are categorized. 3-Dimensional, 2-Dimension, 1-Dimensional and 0-Dimensional materials. Nanostructures; Description of Nanostructures. Mechanical, thermal, and electrical characteristics of nanostructures; surface and interfacial phenomena in nanostructures; Synthesis of Nanostructures/Nanomaterial's; Techniques of synthesis of Nanomaterial's. Top-down approach and Bottom-up approaches. Characterization of Nanostructures; Method for the characterization of nanomaterial's -Structural Characterization, Optical Characterization, Electrical Characterization. Applications of Nanotechnology; Applications of Nanotechnology in Sensors and Detectors. Optical Devices and Displays. Applications of Nanostructures in Electronics and Optics.

PYL322-Advanced Nanotechnology

4 Credit (3-0-2)

Properties of Nanostructures; Vibrational and Thermal Properties of Low dimensional materials, 0D, 1 D, 2D and 3D phonons. Advanced Nanostructures; Advance

nanostructures as such as nanowires, nanotubes and nano rods, their synthesis, and their unique properties. Optical and Luminescence; Properties of Nano materials: Absorption spectra, Transmission and Reflectance. Photoluminescence; properties and Electroluminescence. Synthesis and Characterization of Nanomaterial's; Nanomaterial Synthesis Method. Physical Method, Biological Method, Green Synthesis. Nanomaterial Characterization, Nano electronics and Nano mechanics; Nano electronics: Advanced electronic devices. Nano mechanics.

PYL323-Nanotechnology: Beyond the Basics

4 Credit (3-0-2)

Functional Nanomaterial's; Nature of Carbon bonds, Difference allotropes of carbon, structure and properties of carbon nanotubes and its types. Hybrid Nanomaterial's; Core shell, nanoparticles-enzyme hybrids, nanotube polymer composites. Nanolithography; Top-down approach to nanolithography. E beam lithography. Introduction to Nano computer Architectures; Quantum dot cellular automata (QCA), Properties of Q bits, Quantum circuit models, Quantum gates, Controlled U and NOT gates, Superdense coding. Nanoscale Devices; Organic light emitting devices, Solar cell, Silicon technology processing methods: Cleaning / etching, oxidation, doping, epitaxy. Sputtering, Plasma enhanced CVD.

SED201 Minor Project

(0-0-6) 3 Credits

This minor project, introduced during the odd semester, involves applying practical technical concepts from the Year 1 curriculum to the practical project during the semester break between Year 1 and Year 2. Students will be assigned a mentor for the same and will be guided throughout the project, enhancing their technical skills. The project will be evaluated at the end of the odd semester through documented experiences and presentations.

SED302 Post Production Project

(0-0-12) 6 Credits

The student can do the project based on Film Sound. However, before embarking on the Project, the student must select a guide and approve his/her concept. The student then needs to submit a synopsis defining the concept and execution plan. The student must continually update the guide on progress. He/she should also meet the guide once a week to clarify doubts and make corrections if needed. The guides will provide the students with the format in which the project is to be

submitted.

SED304 Music Production Project

(0-0-12) 6 Credits

Students will be assigned to make a song with a minimum duration of three minutes, with all the applicable concepts and theories in music technology. Their work will be evaluated based on the music compositional & production skill set. They are open to making any Genre/Style of music with their best foot-forward steps for making their production and mix by documenting them in a PDF format with a video.

SED306 Studio Construction Project

(0-0-12) 6 Credits

The students will be commissioned to build a hypothetical studio and treat the room acoustically within a set budget. The student will have to present the building plans and the costs incurred. This presentation will have to be supported with valid measurement data like Room Eq Wizard or Amroc. This exercise will help the students gain a practical understanding of the various challenges faced during the building of a commercial studio, movie theatre, listening rooms, etc.

SED308 Game Audio Project

(0-0-12) 6 Credits

Students in this subject learn about the importance of audio in video games and how it can enhance the overall gaming experience. They learn about the different types of audio used in video games, such as music, sound effects, and dialogue, and how to create and implement these elements into a game. Through this project, the student is required to create audio assets for a game in a DAW and take them into an audio middleware such as FMOD. Students are introduced to the technical aspects of game audio production, such as using Digital Audio Workstations (DAWs), creating and editing sound effects, and integrating audio into game engines. They also learn about the various tools and software used in game audio production, such as FMOD and Wwise. The instructors will guide the students in understanding the best practices necessary to produce the best results.

SEL101 Physics and Electronics

(4-0-0) 4 Credits

In this course, students will learn how sound travels through various mediums and how the human ear perceives these sound waves and transmits them to the

brain. Students will also learn the various characteristics of sound and how to calculate different values to manipulate the same. They will learn how to efficiently use the loudness measurement standards and how to use metering across all professional audio equipment. The course will also enable them to utilize the fundamentals of electronics in audio equipment construction. They will also learn how current flows in a studio and how power must be distributed in the right manner.

SEL102 Digital Audio & Networking Technology

(3-0-0) 3 Credits

This course teaches students how analog signals are converted to digital data and stored in digital media. Students will learn how to calculate the size of audio files to ensure that there is no loss in audio files. Students will learn how to use sample rate, bit depth, and bit rate to export and encode the audio. Students will learn how to use Digital Audio Workstations and how audio signals are converted to a digital format in the recording stage. They will also learn about the factors that might affect the recording quality. Students will learn about how digital audio workstations work and how to adopt a good workflow to ensure they work effectively. Students will also learn about Phase shift, Phase cancellation, Gain Staging, Floating point, etc. They will also learn about Networking Technology. They will be introduced with AoIP, AVB, DANTE, and networking hardware.

SEL104 Digital Audio Workstation

(1-0-6) 4 Credits

DAW refers to computer software used for recording, editing, mixing, and producing digital audio. In this subject, students are introduced to the fundamental concepts of DAW, including audio recording, digital signal processing, MIDI sequencing, and audio mixing. They also learn about various DAW software and its features, including Pro Tools, Logic Pro, Ableton Live, etc. Students are taught how to use these software tools to create high-quality audio productions, including music, podcasts, and sound effects for films and video games. They also learn about different audio file formats and how to export their work to various platforms. Overall, the Digital Audio Workstation subject provides students with the skills and knowledge necessary to succeed in the music and audio industry. As the demand for audio production continues to grow, this subject is becoming increasingly important for anyone interested in pursuing a career in this field.

SEL301 Music Business**(2-0-0) 2 Credits**

In this course, students will get a bird's eye view of the competitive music business ecosystem. Students will be armed with the essential know-how needed to distribute their music in the digital space independently as well as via Record Labels. The course will provide insights into the music distribution and copyright laws that a music creator and facilitators need to be aware of to protect their assets.

SEP101 Ear Training & Working With Instruments**(2-0-2) 3 Credits**

This course deals with the fundamentals of sound engineering, like Ear Training & Signal Flow Fundamentals. It also deals with the setup and day-to-day usage of musical instruments, including topics like elementary understanding of musical instruments, drum tuning, working with pedals, etc.

SEP102 Music Recording and Mixing Techniques**(1-0-6) 4 Credits**

Here, the students practically learn and understand how to use a mic. Preamp setting the right recording levels within the software is crucial to a good final finished audio product. They also learn how to create headphone mixes for the artists to reference the sounds and sounds that they may be recording. They also get proficient in the use of studio equipment and control surfaces to efficiently manage the incoming audio being recorded. They learn how the mixer in the software works, allowing them to mix or blend all the sounds recorded together. They also process the signal with the help of effects and edit the arrangement for further production enhancements.

SEP103 Live and Studio Equipment**(2-0-4) 4 Credits**

In the course, students will learn the differences between various types of microphones in terms of characteristics, sensitivity, pickup patterns, etc. Students will learn what goes into building a studio monitor and how various components are responsible for the outcome. They will also learn how a monitor works and how to select a monitor for their workspace, depending on the size and shape of the room. Students will learn how to navigate and use large format consoles and route signals through them. They will also learn the differences between the different types of consoles and how to

run them in different modes (Inline and Split). Students will learn about the different types of connectors that are used to make connections in the pro audio field. They will also learn how each connector is used for different things and its reason. Students will learn how to route signals into external signal processing units and outboard gear. They will also learn to route signals from one signal processor to another, forming a chain.

SEP201 Digital Music Performance**(1-0-4) 3 Credits**

We introduce the students to Ableton Live as a digital audio workstation and overview some of the powerful features of Ableton LIVE. The students learn to Record, Edit, and Process Audio signals and MIDI Data. We take a deep dive into the understanding of Ableton LIVE signal flow with the use of buses, aux channels, and sends. The students also learn to control software plug-in parameters using smart control and external hardware. Lastly, we introduce Virtual Drummer, a simulation of drums and drummer personality, to generate drum patterns.

SEP202 Acoustics and Studio Construction**(2-0-2) 3 Credits**

In this course, the student will learn how different environments, materials, and room dimensions affect sound. Students will learn the different ways to design or improve the acoustics of a room.

SEP203 Electronic Music Production**(1-0-6) 4 Credits**

This course helps students develop their music arranging and production skills with a core understanding of music technology and Music Theory. It covers the basics of MIDI, Synthesis, & Sampling, to advanced topics like Sequencers, music-performance, and production tips, with industry-standard gears to get insight into commercial and underground music production techniques.

SEP204 Film & Game Sound**(1-0-4) 3 Credits**

This course is designed to impart the art and process of delivering sonic necessities and creative embellishments that go into the making of a film. The course will invite the student to assess films from a sound point of view.

The student will learn industry-standard approaches to working with dialogues. Students will learn the art of Foley, matching ambiences, and designing sounds for film sequences. The course will also provide valuable insights into understanding Game audio requirements and designing sounds for Games.

SEP206 Production and Audio Mixing

(1-0-4) 3 Credits

In this course, the students are shown how to use portable field recorders with multiple input channels. They also get to do on-location recording sessions using clip-on microphones and shotgun microphones. They learn how to record clean sounds like dialogues, voiceover, etc., as sync sounds. They are given sessions to capture ambient sounds without unwanted sounds. They also learn to record ambience in surround 7.1 and 5.1 channels.

SEP208 Podcast Project

(1-0-6) 4 Credits

In this project, students will create the podcast recording project using the skills they learned in DAW & recording classes. In this project, the faculty will mentor the students to understand the best practices required to achieve the best possible output. They will also experience the different approaches needed for another type of podcast. They will learn how to plan & execute the project. They will use the Digital Audio Workstation, miking techniques & equipment to achieve the best possible recording. They will edit & mix the track so that they can create a professional podcast project as per the industry standard.

SEP212 Remix Project

(1-0-6) 4 Credits

In this project, students are expected to take a piece of pre-existing music and transform it into a reimagined version that doesn't fall into the original's genre. Students will use the skills they learned from Electronic Music Production theory & Digital Audio Workstation. Faculties will mentor the students to achieve or complete their project's final output. They will learn how to plan & execute the project. The main objective of the remix project is to provide the best outcome as per industry standards.

SEP301 Surround Sound & ATMOS Technology

(1-0-4) 3 Credits

In a Surround sound and ATMOS technology course, a student will learn about the principles and techniques used in creating immersive and spatial audio experiences. This includes understanding the various speaker configurations used in surround sound setups, the use of panning and mixing techniques to create a sense of depth and directionality in sound, and the use of advanced processing algorithms to create an immersive and realistic audio environment. Students will also learn about the specific features and technologies of the Dolby ATMOS system, including the use of object-based audio, height channels, and the integration of the system with other media components such as video and gaming platforms. They will gain practical skills in configuring and calibrating surround sound and ATMOS systems, as well as creating and mixing audio content optimized for these technologies. One of the primary objectives of a media laws and ethics course is to develop critical thinking and decision-making skills.

SEP303 Game Audio

(1-0-4) 3 Credits

This course will teach students about the fundamentals of sound design, recording techniques, and digital audio workstations (DAWs) used in the game industry, such as middlewares FMOD and Wwise. Students will learn how to create sound effects and music that enhance the gameplay and convey the intended emotions to the player. Additionally, the course will cover implementation techniques and audio engines used in game development, as well as the technical considerations and limitations of audio implementation. Students will also learn about the collaborative nature of audio production in games and how to work effectively with game developers, designers, and other audio professionals using various middleware such as FMOD and Wwise. Finally, the course will expose students to current trends and best practices in the game audio industry.

SEP305 Live Sound

(0-0-6) 3 Credits

The students will be introduced to the world of live sound reinforcement and the different technologies used in the field. The basic application of wireless technology, system engineering, and measurements will be taught in this course. The student will have to learn to work on software like Open Sound Meter, Ease Focus, etc.

SET301 Summer Internship**(0-0-10) 5**

This internship offers students the opportunity to gain insights into the working environment of a studio or organization. It provides a platform for them to implement the concepts they have learned in previous semesters and work on live projects. By working in a studio environment, students become familiar with the various documentation and management techniques used in the industry. This prepares them to handle industry-level live projects and gain hands-on experience in collaborating and working as a team.

SET302/SET304 Internship/Case Study**(0-0-12) 6 Credits**

In this course, students can apply their theoretical knowledge in a practical context and solve real-world problems with hands-on experience that will be valuable when they enter the media industry. It also allows them to meet and work with professionals in a chosen field, which helps build useful contacts and expand their professional network, which will pave the way for them to get a job. Having this experience will help them stand out as an attractive candidate. This exposure will also help the student to choose their career path and allow them to explore their interests with the skills that can either result in a recommendation letter or even a job offer before graduating from the undergraduate programme.

SML200 Engineering Economics**(2-0-2) 3 credits**

This course sets the base for the financial economics, micro and macro economics as a whole and precisely it will help students to learn the practical usage of time value of money, BEP, IRR, NPV, PV, cost and revenue. To enable students to understand the fundamental economic concepts applicable to engineering and to learn the techniques of incorporating inflation factor in economic decision making.

SML300 Entrepreneurship**(3-0-0) 3 credits**

The course is designed to provide students with an understanding of how new ventures/ entrepreneurs contribute to the economic development of a nation. It introduces them to the principles of entrepreneurship and the processes involved in setting up a new enterprise. Not only setting up a new enterprise but also operating it demands equal or more effort. Apart from making

the business plan, they need to understand different business models, financing mechanisms, marketing, inventory management, human resource management etc. The significance of developing a new product and commercializing it, is stressed upon. Subsequently, the students need to understand the different growth strategies. The various exit options are also important and need to be worked upon. The course ends by making the students aware that every business, small or big, needs to be socially responsible. Upon completion of this accelerator-style course, the students will be able to immediately apply lean start-up and disciplined entrepreneurship methodologies toward the advancement of their own venture or within their role as an industry professional.

VAD201 Minor Project**(0-0-6) 3 Credits**

In the Motion graphics/3D packshot project, the idea is to give all the students hands-on experience with more practical learning on how to utilize tools in practice on set and work in a team. How do you observe a shot as a Motion Graphic or 3D artist, and what tools do they need? Students need to work in a group and create a Motion graphics/3D packshot project commercial of their chosen product or services. It is beneficial to nurture the students to this extent as it will boost their confidence, discipline, interest, teamwork, and self-learning. Students would be using Chroma Studio, editing software, and various motion graphics / 3D software to deliver the allocated shot. After completing this project, students will have their Motion graphics/3D packshots ready to enhance the content of their portfolios.

VAD202 Pre-Production for Visual Effects Short Film**(1-1-2) 3 Credits**

In the Pre-Production project, the idea is to make a plan for the Visual Effects short film, which students will be producing during their next Semester. The project brainstorming sessions, Concept Development, Story, Script, Character design, Background Design, Shot planning, etc. It is beneficial to nurture the students to this extent as it will boost their confidence, discipline, interest, teamwork, and understanding of the pipeline of VisualEffects filmmaking.

Students would be expected to use Art Lab and Designing Software to create creative content based on the chosen concept to make the short film. After the completion of this project, students will have the pre-production content ready to be executed next semester.

VAD204 Pre-Production for Animation Short Film

(1-1-2) 3 Credits

In the pre-production project, the idea is to plan the animation short film, which students will be producing during their next semester. The project brainstorming sessions, Concept Development, Story, Script, Character design, Background Design, Shot planning, etc. It is beneficial to nurture the students to this extent as it will boost their confidence, discipline, interest, teamwork, and understanding of the pipeline of Animation filmmaking.

Students would be expected to use Art Lab and Designing Software to create creative content based on the chosen concept to make the short film. After the completion of this project, students will have the pre-production content ready to be executed next semester.

VAD301 Production for Visual Effects Short Film

(1-1-2) 3 Credits

This Project will implement the pre-production, which was done in the previous semester, bearing the course name "Project - Pre-production & presentation." Pre-production includes Story, Script, Character Design, Character Turnaround, Background design, Thumbnail, Storyboarding, Exposure sheet and 2D Animatics.

The Visual Effects Project contains the complete production and post-production process of creating a Visual Effects short film of 1-2 minutes. This will cover their entire Live Action and CGI pipeline process with additional skills of planning for sound and editing the film. These skills in creating a Visual Effects Film will be required by the Media Industry and help to enhance the technical and aesthetic aspects of 3D filmmaking.

This process will create a learning curve for the students. How do I work and coordinate with other team members in the project? Planning for production deliveries to complete the desired deadline. This project showcase will help students understand the complete process of visual effects filmmaking, and it will boost their career growth, too. Also, it will help students to handle projects that will last longer, which they will be working on next semester.

VAD302 Post-Production for Visual Effects Short Film

(1-1-2) 3 Credits

The post-production process includes an understanding of the entire VFX and editing/grading pipeline. This will cover all the previous modules concerning the VFX subject and all the prerequisites for doing the final production of the short film. This project will guide

students through the process of enhancing their post-production skills (rotoscope, motion graphics, paint, FX, and live-action integration with camera tracking, CG, and live compositing). Not only this but also you'll cover how to use color checkers, distortion grids, etc.

So far, you've worked on many puzzle pieces of a post-production pipeline: in terms of pre-production, you've learned about storytelling and storyboarding, character design and model sheets, mood boards, concept art, and development. In production, you trained in live-action and CGI integration. In postproduction, you have been introduced to editing images and sources and to 2.5D. So let's merge all of this creative and technical knowledge into one course: Post-Production.

VAD303 Production for Animation Short Film

(1-1-2) 3 Credits

This Project will implement the pre-production, which was done in the previous semester bearing the course name "Project - Pre-production & presentation". Pre-production includes Story, Script, Character Design, Character Turnaround, Background design, Thumbnail, Storyboarding, Exposure sheet and 2D Animatics.

The 3D Animation Project contains the complete production and post-production process of creating an animation short film of 1-2 minutes. This will cover their entire 3D skills, including Modelling, Texturing Rigging, Animation, and Rendering, with additional skills of planning for sound and editing the film. These skills in creating a 3D short film will be required by the media industry and will help to enhance the technical and aesthetic aspects of 3D filmmaking.

This process will be a learning curve for the students. How do I work and coordinate with other team members in the project? Planning for production deliveries to complete the desired deadline. This project showcase will help students understand the complete process of 3D filmmaking and boost their career growth. Also, it will help students to handle projects that will last longer, which they will be working on next semester.

VAD304 Post-Production for Animation Short Film

(1-1-2) 3 Credits

The Post-Production process contains an understanding of the entire VFX and editing/grading pipeline. This will cover all the previous modules concerning the VFX subject and all the prerequisites for doing the final production of the short film.

This project will guide students through the process of enhancing skills in Post Production (Rotoscopy, Motion graphics, Paint, FX and Live-action integration with

Camera Tracking, CG and Live Compositing) Not only this but also you'll cover how to use colour checker, distortion grids etc.

VAD306 Portfolio Development

(0-0-12)6 Credits

In the Pre-Production project, the idea is to make the planning for the Visual Effects short film which students will be producing during their next Semester. The project brainstorming sessions, Concept Development, Story, Script, Character design, Background Design, Shot planning, etc. It is constructive to nurture the students to this extent as it will boost their confidence, discipline, interest, teamwork and understanding of the pipeline of VisualEffects filmmaking.

Students would be expected to use Art Lab and Designing Software, to create the creative content based on the chosen concept to make the short film. After the completion of this project, students will have the pre-production content ready to be executed next semester.

VAL101N History and Pipeline of Animation

(2-0-0)2 Credits

Animation has been around for more than a century now and it has a vast history to it. As part of this course, we take you through this rich and wide animation history. We also get to learn different processes involved in the creation of animation. We get an overview of these processes which are integral to the pipeline of animation.

VAP101 Foundation of Art & Design

(1-1-2)3 Credits

In addition to providing a foundation for creating aesthetically attractive and effective digital works, the fundamentals of art and design are equally crucial in VFX (Visual Effects) and animation. Students are introduced to the world of art and design in this subject. As the name implies, this is the starting point for art and design. Here, we learn about the fundamentals of design, including the elements and principles of design as well as colour theory. It is also a strategy for incorporating views into our understanding of dimensions and space by learning perspective drawings. Here, we will also improve your sketching abilities, which are essential for communicating your thoughts to others.

VAP102 Concept Art

(1-1-2)3 Credits

Film, video game, and comic book concepts are developed in concept art, which allows artists to explore a variety of styles before selecting the best one for the project. Creating concept art involves creating unique character and scenery designs based on the styles (or concepts) of a fictional world. Concept art shows mock-ups to the art director and other creatives before deciding on a final design.

As the creative process moves quickly through digital art representations, concept art allows everybody to get on the same page before moving on. In this way, stylistic consistency, a uniform colour palette, and a consistent tone can be established. Concept artists' work can contribute to an incohesive final product, affecting the individual designers' work.

VAP103 Graphic Design for Animation and Visual Effects

(1-1-2)3 Credits

Visual design is very integral to animation and visual effects. As part of this course, we learn these visual design techniques which are very critical to creating beautiful images in animation. To learn design we use Photoshop as the primary software. So, along with visual design, you learn the basics of Photoshop. Digital painting, matte painting and digital art created through various tools of Photoshop are the output of this course.

VAP104 2D Animation

(1-0-2)2 Credits

In 2D animation, we explore the basics of animation, which include principles and guidelines to get started with the medium. This course teaches the entire animation process, starting with a concept, storyboarding, animatic, and finally animation. As animation is capable of creating the impossible, 2D animation allows animated environments to feature depth and emotion without actually having dimensional depth.

A 2D animation could be created using either a conventional or digital medium. The software used for the creation of cartoons, animes, and video games, such as Adobe Animate CC, will be taught to you.

VAP105 Techniques of Videography

(1-1-2)3 Credits

This subject covers all the basic aspects of skills and techniques required for a creative video or filming.

The major aspect covering this subject is Storytelling which covers, Types of stories, and the basics of film language. It also covers Photography with an Introduction to photography, Principles of still and motion camera, and cinematography. The last part covers the art of Editing which covers the Introduction of the non-linear video editing application, UI and history of video editing, learning tools for editing, types of cuts and transitions and their uses, using effects to improve the looks of the video, colour correction concepts to refine the video and colour grading for a different genre.

VAP106 Fundamentals of 3D

(1-1-2)3 Credits

The fundamentals of 3D involve understanding the three-dimensional space and the objects within it. 3D graphics and modelling require an understanding of geometry, lighting, and materials. Geometry involves creating shapes, while lighting involves setting up light sources to simulate real-world lighting. Materials involve defining the surface properties of objects, such as texture, reflectivity, and transparency. 3D modelling is used in various industries, including animation, gaming, architecture, and product design. The process involves creating a 3D model, adding textures and lighting, and rendering the final image. Understanding the fundamentals of 3D is essential to create realistic and visually appealing 3D graphics.

VAP108 Layer-Based Compositing

(1-1-2)3 Credits

Learning the ins and outs of this powerful motion graphics and visual effects programme may be done well by enrolling in a layer-based compositing course. This course will help you develop your talents and increase your creative options, whether a novice or a seasoned expert. It teaches the After Effects fundamentals, while others concentrate on more complex methods like compositing, motion graphics, and VFX. Taking your goals, the current level of proficiency, and the instructor's knowledge and teaching style into account while learning Layer-based compositing is crucial. You may become proficient with After Effects and produce breathtaking visual effects and animations with the correct training and perseverance.

VAP112 Introduction to Compositing

(1-1-2)3 Credits

In this subject, the foundation of VFX compositing and the essential part of any VFX production which is Rotoscopy and Paint-cleanup, is covered. In this course, SilhouetteFX is used for training. Silhouette FX is the industry standard software for rotoscope and VFX Paint-related tasks. This course covers object Roto, Character Roto, Hair Roto, Roto with tracking, Paint clean-up, wire removal, object removal etc advanced VFX techniques. To understand the VFX compositing in depth it is essential to know the rotoscope and paint techniques so this course fills the gap by providing the necessary knowledge and prepares students for more advanced compositing techniques.

VAP201 Advanced 3D

(1-1-2)3 Credits

Advanced 3D refers to the cutting-edge techniques used to create highly realistic and intricate three-dimensional graphics in various fields, such as gaming, animation, and architecture. This process involves utilizing advanced software, hardware, and algorithms to create lifelike textures, lighting, and physics simulations. Some essential techniques used in advanced 3D include ray tracing, voxel-based rendering, procedural generation, and physics-based animation. These techniques allow for more immersive and interactive user experiences and more accurate visualizations for professionals in architecture and engineering. As technology advances, so will the possibilities for advanced 3D graphics.

VAP202 Camera tracking & Matchmove

(1-0-2)2 Credits

In this subject, students learn how CGI or any other element is integrated into a live-action shot. Getting the motion and movement of the camera while the shot was captured using the camera itself and then recreating the camera for a 3D package like Maya so that we can integrate any 3D element into the scene is known as Camera tracking and match moving. Nuke, 3D Equalizer, and Pf track are some of the industry standard software used for these tasks along with Maya. As building something on a film shooting set physically is expensive, time-consuming and may not be photoreal, CGI is widely used today and integrating CGI with moving shots is done using camera tracking and matchmaking techniques.

VAP203 Texturing and Shading

(1-1-2)3 Credits

This subject is all about Textures and Shaders, what is a Texture, what is a shader, how it's created and how it's implemented on the object. Textures and shaders differ based on the industrial requirements, students will be able to identify and create Textures and shaders either for Game or for VFX.

VAP204 Rigging

(1-1-2)3 Credits

This subject provides insight into the link between Modeling and Animation. Students can learn a lot by understanding the different aspects of Rigging, they must also explore not just through the software but must undergo deep research to understand the Kinematic function a term taken from Robotics or Anatomy which is used to understand not just the muscle structure but also the movement of different parts of the body when it comes to an organic structure. The smooth function of a Rig depends upon the controls and the constraints it consists of, students must understand these aspects concerning the requirement or the functionality of the Rig.

VAP205 Lighting and Rendering for Visual Effects

(1-1-2)3 Credits

Through this subject Students will be able to learn about the usage of Lights in a scenario, its various forms and aspects and more precisely how to create, modify and alter the light depending on the environment. Lighting alone is not enough to give an output so through proper Render setup students will be able to amplify their output and get the most out of the software. Rendering not only tells about the Render setup but also talks about the various camera aspects which are taken from the real-world camera settings

VAP206 Advance Compositing I

(1-1-4)4 Credits

In this subject, students are introduced to node-based compositing. Nuke is used for the compositing training in this course. Nuke is industry standard software for all major VFX studios and complex VFX production pipelines. This is a complete package for VFX tasks like rotoscope, VFX paint, cleanup, tracking, match moving and compositing. This also covers the greenscreen or chroma removal compositing techniques where green or blue backdrop is used while shooting which can

be later replaced by any required background in the compositing stage. Compositing can be very complex and it can include 100s of elements. Handling a huge number of elements and managing the composite is easier in a node-based compositing workflow which is why Nuke is every compositor's fav.

VAP207 FX

(1-1-2)3 Credits

The term "FX," short for "special effects," refers to the methods applied to enhance the visual and aural aspects of a movie or television programme. Practical effects, computer-generated effects, and a combination are used to create special effects. Creating physical effects on the set, such as explosions, makeup effects, and animatronics, is a practical effect. In post-production, these effects are frequently blended with digital effects, and they are produced utilizing various materials, including prosthetics, miniatures, and pyrotechnics. The process of producing effects utilizing software and digital technologies is known as computer-generated effects or CGI. This can involve developing digital characters, locations, and objects and improving and combining real-world video. Filmmakers may now create immersive and realistic worlds and experiences because of the increasingly widespread and skilled use of special effects. Everything from imaginative beings and otherworldly settings to actual explosions and injuries can be produced with special effects. Ultimately, special effects are a crucial component of contemporary cinema because they enable filmmakers to push the envelope and provide spectators with exceptional experiences.

VAP208 Environment Creation & Basics of Game Engine

(1-0-2)2 Credits

Environment creation involves designing and constructing the virtual world where a game occurs. This includes creating terrain, buildings, characters, and objects in the game environment. Game engines are the software frameworks that provide developers with the tools necessary to develop games. They provide various functions like physics simulation, audio rendering, and input management. The basics of game engine development include understanding programming languages, game mechanics, and graphics programming. With a solid foundation in these areas, developers can create immersive and engaging game environments with which players can explore and interact.

VAP301 Sculpting for Visual Effects

(1-1-4)4 Credits

Sculpting for Visual Effects is crucial for creating realistic and detailed 3D models used in film, television, and video games. Sculpting allows artists to manipulate digital clay, creating intricate textures and details for characters, creatures, and environments. This technique helps to bring a sense of realism and depth to the final product, making it visually stunning and believable. Sculpting for Visual Effects involves using software like ZBrush or Mudbox, which offers a range of powerful tools and brushes for artists to create intricate 3D models. Mastering this skill takes time and practice, but the result is worth the effort, producing amazing visual effects for audiences to enjoy.

VAP303 Advance Compositing II

(1-1-4)4 Credits

This subject covers professional node-based software tools and techniques which are used in the current industry covering Introduction to VFX along with understanding advanced node-flow and its concept. Also, the production techniques are covered including an Introduction to 3D Projection Mapping, advanced clean-up, and Stereoscopy techniques.

This subject builds up the concept and workflow and uses various advanced tools and techniques used to finalize the VFX shot. This subject teaches how to place 2D and 3D elements using software-integrated 3D environments. This workspace allows complex projection workflows using custom geometry to be set up and rendered with ease.

VAP305 3D Animation

(1-1-4)4 Credits

The details of a 3D animation and the specific programme are Introduction to 3D animation: This includes an overview of the principles of animation, the history of animation, and the different types of animation. If art is an imitation of life, animation is an imitation of the motion of life. Students are taught to observe the surroundings and implement them in their work using the above-mentioned principles. Animation: This involves creating movement and actions for the 3D characters and objects. Rendering: This involves producing the final 3D animation by combining all of the elements created in the previous steps. Additionally, this course also covers topics such as special effects, character design, and motion graphics.

VAT301 Summer Internship

(0-0-10)5 Credits

This internship gives insights into the Studio's / Organization's working environment and provides a platform for the students to implement all the concepts learnt in the previous semesters and handle live projects. The studio environment makes them aware of the various documentation and management techniques being used in the industry, which will make them ready to handle industry-level live projects and hands-on experience in collaborating and learning with Teamwork.

VAT302 Animation and Visual Effects Internship

(0-0-8)4 Credits

This internship gives insights of Studio's / Organization's working environment and provides a platform for the students to implement all the concepts learnt in the previous semesters and handle live projects. The studio environment makes them aware of the various documentation and management techniques being used in the industry, which will make them ready to handle industry-level live projects and hands-on experience on collaborating and learning with Teamwork."

VCD201 Minor Project

(0-0-6)3 Credits

This minor project, introduced during the odd semester, involves applying practical technical concepts from the Year 1 curriculum to the practical project during the semester break between Year 1 and Year 2. Students will be assigned a mentor for the same and will be guided throughout the project, enhancing their technical skills. The project will be evaluated at the end of the odd semester through documented experiences and presentations.

VCD302 Advertising Photography Project

(0-0-12)6 Credits

The Advertising Photography Project is a practical project that requires students to apply their knowledge of photography to create visually appealing and effective advertising images for a product or service. This project involves the use of lighting, composition, and post-production techniques to create images that communicate the brand message and appeal to the target audience.

VCD304 Video Production Project**(0-0-12) 6 Credits**

The Video Production project requires students to create short films, ad films, or any audio-visual content based on their learning during the past semesters. This project involves the entire video production process, from scriptwriting to pre-production, production, post-production, and final delivery, allowing students to apply their skills and knowledge to create engaging and visually appealing content.

VCD306 Website Design Project**(0-0-8) 4 Credits**

The Website Design Project requires students to create a website to showcase their work/portfolio. This project involves the use of web design software, and web design websites, allowing students to develop skills in user experience design and responsive design which are highly valued in the digital media industry.

VCD308 Social Media Campaign Project**(0-0-8) 4 Credits**

This project requires students to reach out to a local brand and create a social media campaign for them. This project involves working with a real client, developing a marketing strategy, creating visual content, and implementing it across various social media platforms, allowing students to gain practical experience in digital marketing and communication.

VCD312 Graduation Project**(0-0-20) 10 Credits**

The Graduation Project provides students with the opportunity to showcase all their learning during the last 4 years in an audio-visual format. This project involves the entire production process, from conceptualization to pre-production, production, post-production, and final delivery, allowing students to demonstrate their creativity, technical skills, and knowledge of visual communication.

VCP101 Fundamentals of Photography**(2-1-2) 4 Credits**

By mastering the fundamentals of photography, one can produce high-quality images that effectively communicate their desired message or emotion. This includes understanding the various camera settings and how they affect the final image, such as shutter speed, aperture, ISO, and white balance. It also

involves understanding composition, lighting, and colour theory to create aesthetically pleasing and impactful photographs.

VCP102 Genres of Photography**(1-1-2) 3 Credits**

Genres of Photography is a subject that explores the different types of photography and their unique characteristics. Students will learn about landscape, portrait, documentary, fashion, and still life photography, as well as other genres, and how to use various techniques and equipment to capture and create images that effectively convey their intended message.

VCP103 Fundamentals of Video Production**(2-1-2) 4 Credits**

Students will learn how to plan, shoot, and edit video content, and will also gain an understanding of the different formats and platforms for distributing video content. It includes understanding the technical aspects of video production, such as camera angles, lighting, sound, and editing, as well as storytelling techniques, scriptwriting, and visual storytelling.

VCP104 Concepts of Cinematography**(2-1-2) 3 Credits**

Concepts of Cinematography is a subject that covers the principles and techniques of visual storytelling through the use of camera and lighting. It includes topics such as camera angles, framing, movement, lenses, and lighting, and how to use these elements to create a cinematic experience that effectively communicates the story to the audience.

VCP105 Design Concepts and Principles**(2-0-4) 4 Credits**

Design Concepts and Principles is a subject that introduces students to the fundamental principles and elements of design. It covers topics such as colour theory, typography, composition, and visual hierarchy, providing students with a solid foundation in design principles that can be applied to a wide range of design projects.

VCP106 Typography and study of brands**(2-1-2) 3 Credits**

Students will gain knowledge of typography's historical significance, the selection of the right typeface, and the

creation of typographic guidelines that reflect a brand's personality and values. Typography and the study of brands is a subject that plays a critical role in branding and marketing by emphasizing the importance of typography in creating an effective visual identity.

VCP108 Fundamentals of Digital Image Processing

(1-1-2) 3 Credits

Fundamentals of Digital Image Processing is important because it provides students with the knowledge and skills necessary to manipulate and enhance digital images. This subject covers topics such as image filtering, enhancement, compression, and restoration, which are essential for a wide range of applications such as medical imaging, surveillance, and multimedia.

VCP201 Lighting Techniques (Video & Still)

(0-0-6) 3 Credits

This subject covers topics such as the types of lighting, lighting placement, and lighting equipment, which are essential for anyone involved in photography, videography, or any other visual media field.

VCP202 Design for Web

(0-1-2) 3 Credits

Visual communication students will benefit from the subject Design for Web, as it provides them with the knowledge and skills to create visually appealing and effective websites. This subject covers topics such as user experience design, responsive design, web typography, and coding, which are essential for designing websites that effectively communicate the intended message to the audience.

VCP203 Fundamentals of Video Editing

(1-1-2) 3 Credits

Studying the fundamentals of video editing is important in visual communication because it teaches students the basic concepts and techniques of video editing. This subject covers topics such as cutting, transitions, audio editing, and colour correction, which are crucial for creating a professional-looking video that effectively communicates the intended message to the audience.

VCP204 Fundamentals of Audiovisual Production

(0-2-2) 3 Credits

Audio-visual production is significant as it provides an effective means of communication through the combination of sound, images, and video. It allows individuals to express themselves creatively and professionally, providing them with the opportunity to create engaging content for a wide range of applications such as film, television, advertising, and online media.

VCP205 Design for print

(1-1-2) 3 Credits

Visual communication students will benefit from the subject Design for print, as it equips them with the skills and knowledge necessary for creating printed materials such as brochures, posters, and business cards. This subject covers topics such as layout, typography, colour, and printing techniques, which are essential for designing visually appealing and effective printed materials for a variety of purposes.

VCP206 Fundamentals of motion graphics

(0-2-2) 3 Credits

Fundamentals of motion graphics is a subject that introduces students to the principles and techniques of creating animated graphics for film, television, advertising, and digital media. This subject covers topics such as keyframing, motion paths, timing, and effects, providing students with the skills and knowledge necessary to create visually stunning and engaging motion graphics.

VCP 301 Media laws and ethics

(3-0-0) 3 Credits

The study of media laws and ethics is crucial in visual communication because it provides students with an understanding of the legal and ethical frameworks that govern media practices. This subject covers topics such as freedom of expression, privacy, copyright, and censorship, which are essential for anyone involved in creating visual content for public consumption.

VCP303 Digital Video Production

(0-2-8) 6 Credits

Choosing Digital Video Production as an elective subject provides students with the opportunity to develop advanced skills in video production and storytelling. This subject covers topics such as advanced camera techniques, post-production, and storytelling, which

are essential for anyone seeking a career in video production or related fields.

VCP305 Graphic Designing

(0-2-8) 6 Credits

Choosing Graphic design as an elective subject can be a great choice for students interested in creative and artistic pursuits. This subject provides students with skills and knowledge in visual communication, graphic design software, typography, layout design, and branding, which are highly valued in a range of industries, including advertising, marketing, publishing, and digital media.

VCP307 Advance Image Processing

(0-2-4) 4 Credits

Advanced Image Processing is a subject that explores complex image processing techniques such as segmentation, compression, restoration, and enhancement. This subject is essential for students who wish to delve deeper into the field of digital image processing, and it provides them with the skills and knowledge necessary to analyze and manipulate images for a range of applications.

VCP309 Advance Video Editing

(0-2-4) 4 Credits

Advanced video editing is an elective subject that builds upon the fundamental concepts and techniques of video editing. It covers topics such as colour grading, visual effects, advanced audio editing, and compositing, providing students with the skills and knowledge necessary to create professional-grade videos that are visually stunning and engaging.

VCP311 Digital marketing

(1-2-0) 3 Credits

Digital marketing is crucial in visual communication as it provides a platform for businesses to communicate their brand message through various digital channels such as social media, email, and websites. It allows visual communication professionals to reach a wider audience and engage with them through visually appealing and interactive content. With the growing importance of digital media, understanding digital marketing is essential for anyone seeking a career in visual communication.

VCT301 Summer Internship

(0-0-10)5 Credits

Summer internships provide students with an opportunity to gain practical experience in their field of study, apply their learning to real-world situations, and develop new skills and industry connections. It also helps students gain exposure to different industries, work cultures, and job responsibilities, enhancing their employability and preparing them for their future careers.



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