



Academic Programmes Ordinances & Regulations

2014

- **Bachelor of Technology**
- **Bachelor of Architecture**
- **Integrated Dual-Degree Programmes**
- **Integrated M.Tech. Programmes**
- **Integrated M.Sc. Programmes**



Indian Institute of Technology Roorkee
Roorkee - 247 667 (Uttarakhand)

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PREAMBLE

Indian Institute of Technology Roorkee (IITR), being the first technical institution in Asia and one of the premier technical institutions in India today, has been a front runner in imparting state-of-the-art technical education to the people of this country, and has produced engineers par excellence. Indian Institute of Technology Roorkee inherits the legacy of excellence in undergraduate teaching of the erstwhile University of Roorkee as evident from its illustrious alumni and their engineering feats like Aswan to Bhakra-Nangal dam across the world, standing as testimonies of their capabilities and excellence. The aim of the education at the undergraduate level is to build on the knowledge gained by an undergraduate student through the school curriculum by imparting knowledge with the help of classroom instructions, training and other modes of teaching. After completing the curriculum, the student will acquire adequate knowledge base in the desired branch, which could be easily employed for the solution of real life problems and developed further through higher education, for reaching the frontiers of knowledge in his/her area of specialisation. The Institute also imparts knowledge to students in the emerging areas of science and technology and offers five-year Integrated M.Sc. and M.Tech. programmes in sciences. The Institute allows undergraduate students to switch over to five-year Integrated Dual Degree programmes (B.Tech. + M.Tech.) or do additional courses for honours or minor specialization degrees. The Institute also offers Integrated Dual Degree (M.Tech. + Ph.D) in engineering. The aim of these courses is to catalyze and develop the research potential of the students.

The undergraduate and postgraduate programmes have both academic and extracurricular components designed for the integrated development of professionals possessing individual values of ethics and morality. Many of the students after completing their programmes start working in different organizations where teamwork is the predominant mode of functioning. Ethics and discipline are of paramount importance and without these values teamwork is impossible.

In these days of rapid evolution of knowledge, the academic programmes require provision for continuous updating of the contents of the syllabi to incorporate new developments in a particular area of knowledge. The present course structure has been designed to overcome the weaknesses of the previous structure and to meet the challenges of the society in next decade. The curriculum is, therefore, broadly defined to make it possible for the teacher to update it continuously by including the latest developments. Exchange of knowledge and methodology across the disciplines is important in furthering its frontiers. In keeping with this spirit, the curriculum encourages students to learn across different branches. Apart from the inputs of social sciences and management, environmental science has also been introduced in different programmes in engineering and sciences, since many novel ideas from these areas are being borrowed in engineering and sciences. The curriculum at the undergraduate and postgraduate level has been so structured that it offers enough flexibility to the students to tailor their learning to individual inclinations and the desired career objectives.

The curriculum in a given branch at the undergraduate level and postgraduate level includes academic programmes involving ingredients of classroom teaching, laboratory practices, training, seminar and project. These ingredients are specified in terms of courses with a given code specifying the subject(s) to be taught under them. Every course has credits depending on the workload it involves. A student is continuously evaluated during the conduct of a course and is awarded a letter grade on the basis of his/her performance. The academic year is divided into semesters and in each semester the students have to register in a branch of study for a limited number of courses. When a student earns a minimum number of credits specified for a given curriculum, he becomes eligible for the award of the degree.

THE INSTITUTE

Indian Institute of Technology Roorkee, the successor of the University of Roorkee, is the oldest technical institution of the country. Established as the Roorkee College in 1847 and rechristened as the Thomson College of Civil Engineering in 1854, it made tremendous contributions in the development of infrastructural base-roads and highways, canals and irrigation networks, railways and engineering industries. Recognising its outstanding contributions and its potential for growth, the college was elevated to be the first Technical University of India on November 25, 1948. Nurtured as the premier institution by the State of Uttar Pradesh, the University was declared an Institute of national importance and converted into the Indian Institute of Technology Roorkee by an Act of Parliament with effect from September 21, 2001.

The academic activities of the Institute are spread over three campuses: (i) 365 acres main campus at Roorkee, (ii) 25 acres campus at Department of Paper Technology (Saharanpur) and (iii) 10 acres campus of Greater Noida Extension Centre at Greater Noida. The Institute offers several undergraduate programmes leading to Bachelors degree in different disciplines of engineering, technology and architecture, Integrated dual-degree programmes, Integrated Masters programmes in different disciplines of engineering and sciences and postgraduate programmes in specialised areas leading to Masters degree in technology, architecture, sciences and management. In addition, the Institute is engaged in advanced level research and offers doctoral and postdoctoral programmes in the areas of cutting edge technologies and sciences.

The Institute has a highly qualified and motivated faculty of about 400 teachers who are engaged in both teaching and research, as well as offer their expertise through consultancy services to private and public sector industries as well as various government agencies. The Institute has at present about 4400 undergraduate students, 2000 postgraduate students and nearly 1187 Ph.D. scholars including overseas students from several countries.

A number of academic and service centres are engaged in interdisciplinary research and many collaborative programmes exist between the Institute and other Institutions in India and abroad. The teaching and research work at the Institute is amply supported by central facilities such as the Central Library with more than 3.8 lakhs printed volumes of books, journals and periodicals. The Central Library is a member of the Indian National Digital Library in Engineering Science and Technology (INDEST) Consortium. The membership provides online access to about 13000 e-journals. Important centres on the campus include: Educational Technology Cell, a modern Institute Computer Centre, an Institute Instrumentation Centre with high quality analytical instruments and an Information Superhighway Centre with wide-band internet connectivity.

The Institute prepares students to meet the ever-increasing technological and social challenges with its traditions of self-discipline, hard work, all round personality development and a creative approach to problem solving. An extensive infrastructure exists to imbibe and cultivate these attributes amongst the students. To maintain the highest standards, the Institute has recently introduced major changes in its undergraduate curricular structure, with emphasis on greater flexibility and interdisciplinary focus.

The Institute has procured a large number of state-of-the-art equipment and various other facilities, thus updating and modernizing its laboratories. All the Departments of the Institute have

modern laboratories equipped with sophisticated facilities. Some of the state-of-the-art facilities available include: Atomic Force Microscope, Broadband probe, LCNMR MS, Thermal Ionization Mass Spectrometer (Triton T1 from Thermo Finnigan, U.K.) for high resolution isotope ratio determination, X-ray diffractometer (Brucker, Germany), Thermal Analysis System for TGA, DTA and DSC studies. Other sophisticated facilities and laboratories at different departments are Real Time Digital Simulator (RTDS), Climatology Laboratory, Protein Biochemistry and Analytical Biotechnological Laboratory, Process Dynamic Control Laboratory, Advanced Manufacturing Laboratory, Ultra Clean Laboratory for Geochronology isotope Geology, Corrosion Engineering Laboratory, VLSI Design Laboratory, Wind Tunnel, etc. A fully computerized satellite earth station and an automatic satellite data acquisition system have been installed at the Institute which can acquire data from more than twenty neighbouring countries.

A large number of distinguished organizations interact with the Institute through research and consultancy services, which bears testimony to the important role being played by the Institute in the national development. The Institute also offers, on request, tailor-made short-term continuing education programmes, specifically for personnel from industry and service organizations.

The Indian Institute of Technology Roorkee has a unique character and is fully residential for the students and the faculty. The Institute campus hums with diverse creative activities, which constantly serve to bring students and the staff in close contact, thereby fostering an all round intellectual development. On visiting the campus, one is struck by the elegance of the main building of renaissance style, spacious lawns and sports grounds. The Institute campus has an excellent gymnasium, covered badminton and squash courts, lawn tennis courts, an Olympic size swimming pool, the largest number of Billiards Tables in an institution, and numerous recreational and pastime centres like the Students' Clubs, Hobbies Club, Boat Club, Cultural Society and an Institute Cinema Club. The students are housed comfortably in hostels with excellent dining facilities. A fairly equipped Institute Hospital caters to the health needs of the campus community.

The Institute organizes several co-curricular activities for all-round personality development of the students, such as THOMSO and RAVE, the annual youth festivals, COGNIZANCE, an all-India technical festival, and JIGYASA, a national-level paper presentation contest. Hobbies club and its annual exhibition SHRISTI is one of the unique features of the Institute that promotes creativity among students.

Students are encouraged to participate in various sports and cultural activities to help them develop a well balanced personality. Every year, they organize an exhibition of fine arts, sculptures and carvings, philately, photography, scientific models, etc., besides sports activities. Being a rather compact campus, a cheerful and friendly atmosphere prevails and students feel at home very soon after joining the Institute. The green verdant surroundings and the stately Ganga Canal flowing nearby provide a very stimulating and creative environment.

The Institute follows modern methods of continuous evaluation through a credit system in all its UG, 5-year Dual-Degree and PG programmes. The system offers flexibility to progress at a pace commensurate with the capabilities of a student, subject to minimum credit requirements. There is no annual/semester pass or fail. The award system follows letter grades on a 10-point scale where the performance is measured in terms of weighted Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). A student has to satisfy a minimum CGPA and earned credit requirements to be eligible for the award of degree.

Academic Departments, Centres and Units

There are twenty-one academic departments in the Institute, one academic centre, three centres of excellence, six academic service units and three other units.

Academic Departments

- Applied Science and Engineering*
- Architecture and Planning
- Biotechnology
- Chemical Engineering
- Chemistry
- Civil Engineering
- Computer Science and Engineering
- Earth Sciences
- Earthquake Engineering
- Electrical Engineering
- Electronics and Communication Engineering
- Humanities and Social Sciences
- Hydrology
- Management Studies
- Mathematics
- Mechanical and Industrial Engineering
- Metallurgical and Materials Engineering
- Paper Technology*
- Physics
- Polymer and Process Engineering*
- Water Resources Development and Management

*Note: These departments are at Saharanpur Campus.

Academic Centre

- Alternate Hydro-Energy Centre

Centres of Excellence

- Centre for Disaster Mitigation and Management
- Centre for Nanotechnology
- Centre for Transportation Systems

Academic Service Centres

- Centre for Continuing Education
- Central Library
- Institute Computer Centre
- Institute Instrumentation Centre
- Information Superhighway Centre
- Quality Improvement Programme Centre

Other Units

- Education Technology Cell
- Training and Placement Office
- Intellectual Property Right Cell

The Academic Departments and Centres offer courses to the students of various disciplines. Academic curricula are so devised that a student of one discipline can take some courses of other disciplines as well. Such flexibility helps a student to develop his core competence together with the interdisciplinary skills in the area of his interest.

Programmes

The main aim of education at IIT Roorkee is to enable students to face the wide-ranging changes taking place in the fields of technology, environment and management with confidence. This includes undertaking design, development, construction, production, managerial and entrepreneurial activities, and higher studies in their chosen or allied interdisciplinary fields of study.

The Institute lays great emphasis on assisting students in the development of character and self confidence with management traits. To achieve these goals, the curriculum lays more stress on learning and less on teaching. Efforts are made to encourage self-learning, creative thinking, critical evaluation, spirit of

inquiry and imbibing the culture of lifelong learning.

The Institute offers following programmes (Table-1) leading to Bachelors degree, Integrated Dual Degree (IDD), Integrated M.Tech. (IMT) and Integrated M.Sc. (IMS) degrees in different disciplines of Engineering, Technology, Architecture and Science:

Table-1: Various UG/IDD/IMS/IMT Programmes

S.No.	Programme	Duration (in years)	Department
Bachelors Degree			
1.	B.Arch.	5	Architecture
2.	B.Tech. (Biotechnology)	4	Biotechnology
3.	B.Tech. (Chemical Engineering)	4	Chemical Engineering
4.	B.Tech. (Civil Engineering)	4	Civil Engineering
5.	B.Tech. (Computer Science and Engineering)	4	Computer Science and Engineering
6.	B.Tech. (Electrical Engineering)	4	Electrical Engineering
7.	B.Tech. (Electronics and Communication Engineering)	4	Electronics and Telecommunication
8.	B.Tech. (Mechanical Engineering)	4	Mechanical and Industrial Engineering
9.	B.Tech. (Metallurgical and Materials Engineering)	4	Metallurgical and Materials Engineering
10.	B.Tech. (Production and Industrial Engineering)	4	Mechanical and Industrial Engineering
11.	B.Tech. (Polymer Science and Technology)	4	Polymer and Process Engineering

Integrated Dual Degree (IDD)*

1.	B.Tech. (Process Engineering) and M.B.A.	5	Polymer and Process Engineering (Saharanpur Campus)
Integrated Master of Science (IMS)			
1.	M.Sc. (Applied Mathematics)	5	Mathematics
2.	M.Sc. (Physics)	5	Physics
Integrated Master of Technology (IMT)			
1.	M.Tech. (Geophysical Technology)	5	Earth Sciences
2.	M.Tech. (Geological Technology)	5	Earth Sciences

* In other B.Tech. programmes, there is a provision for undergraduate students admitted to B.Tech. programmes to switch over to approved IDD programmes of the departments after completion of 3rd year provided their CGPA>7.5 after completion of 3rd year.

Structure of Undergraduate/Integrated Dual-Degree/Integrated M.Sc./Integrated M.Tech. Programmes

The four-year B.Tech. programmes and five-year B.Arch. programme comprise of courses divided in five distinct areas, namely: Institute Core, Departmental Core, Institute Elective and Departmental Elective Courses, and Co-Curricular Activities.

The five-year Integrated Dual Degree, Integrated M.Tech. and M.Sc. programmes comprise of courses other than above program specific courses, seminar and dissertation.

Credits assigned to various constituents of the Undergraduate/IDD/Integrated M.Sc. and Integrated M.Tech.

curriculum structure are given in Tables-2. Credit and Curricular components for Institute core courses and Institute elective courses are given in the following Tables 3-4. The B.Tech. course structure is shown in Appendix-A.

Institute Core Courses

All UG/IDD/IMS/IMT students need to complete few Institute core courses on Basic sciences (BSC), Engineering Sciences (ESC) specific to the programmes, Humanities and Social Sciences (HSSMC) and General Sciences (GSC). Different departments have participated in designing these courses so as to cater to the requirement of their programme(s) with the parent departments. These courses are planned to give the students a firm base in the areas of science. These courses are presented in Table-3.

Departmental Core Courses (DCC)

The Departmental core consists of courses considered essential for a chosen engineering/science discipline, including laboratory courses, industry oriented problem, engineering design and project. Educational tour, group discussion, development of technical communication skills and practical training form an essential part of the curricular structure.

Institute Elective Courses

The Institute Electives are the courses offered by different academic Departments/Centre to the students. These courses are divided into two basic categories viz. Humanities, Social Sciences and Management Elective Course (HSSMEC) and Open Elective Course (OEC). The students are free to select two courses from the HSSMEC category and one course from the OEC category, depending upon their interests and inclination. The Institute elective courses are shown in Table-4.

Departmental Elective Courses (DEC)

The students are required to complete a number of Departmental Elective Courses offered by his/her parent department/centre. The Departmental Elective Courses are divided into two categories. Category-1 electives are common to all. Category-2 electives, which comprise electives from a specialized field, need to be picked so as the students can excel in a specialisation within a discipline.

Minor Specialisation Courses (MSC)

The student with good academic standing (having CGPA>7.5) desirous of excelling in some specialisation in other than his/her own department may be allowed to take 4-5 additional courses equivalent to 18-20 credits from that specialisation. These courses have been defined as Minor Specialisation Courses (MSC). The courses from minor specialisation may be taken from any one engineering, science, humanities and management disciplines. These courses will have to be selected from a list of such courses (basket) offered by the departments, however, there will be a maximum limit to the seats. These students will be given degree in main engineering area with minor specialisation in other area. For example, the degree certificate will indicate B.Tech. in Civil Engineering with Minor Specialisation in Physics.

Departmental Honours Courses (DHC)

The students with good academic standing (having CGPA>7.5) desirous of excelling in a particular specialisation of his/her parent department may be allowed to take 4-5 additional courses equivalent to 18-20 credits from that specialisation. These courses will have to be selected from a list of such courses (basket) identified and offered by the departments. These students will be given degree in main engineering area with Honours in his chosen area of specialisation. For example, the degree certificate will indicate B.Tech. in Civil Engineering with Honours in Structures.

Each course of the above programmes has a number of credits assigned to it depending upon the academic load and weekly hours of lectures, tutorials, practical and self study. Normally, one credit is assigned to each

lecture of one hour or each tutorial of one hour or practical of two hours.

Co-Curricular Activities

The students are also encouraged to participate in a variety of co-curricular and sports activities with a view to develop their overall personality and groom a student to be an engineer-manager-scientist. These activities are also given weights in calculating the overall academic grade of a student.

(a) Discipline

In order to enforce discipline among students, discipline is also treated as an activity. Two credits have been assigned to this activity. Grades will be awarded by Dean of Students' Welfare and will be tabulated in Spring Semester at the end of Final Year.

(b) Hindi/N.C.C./N.S.O./N.S.S./Rangering

Students of B.Tech., B.Arch., IDD, Integrated M.Tech. and Integrated M.Sc. programmes have to take National Cadet Corps (NCC)/ National Service Scheme (NSS)/ National Sports Organization (NSO) at the first year level. Selection for N.C.C./N.S.O./N.S.S. is usually completed in a special session held during the Orientation Programme for the first year students immediately after their registration in the Institute. Foreign Students will be offered Hindi in place of N.C.C. Rangering will be offered to girl students. Two credits have been assigned to these activities. These activities will run in both semesters but will be evaluated at the end of First Year.

(c) Proficiencies

Co-Curricular Activities under Proficiency, as listed below, will be offered as a 2-credit course to the students of B.Tech., B.Arch., IDD, IMS and IMT Programmes from first year to final year. These activities will run in both the semesters but will be evaluated and tabulated in spring semester only. The students are required to select only one proficiency from the list in 2nd year which will remain the same up to the final year. The grades from the 'Proficiency' opted for by the students will be awarded at the end of the Final Year. Proficiency, once opted, cannot be changed during the year of the study. In case a particular activity is opted by a large number of students and some students cannot be accommodated, the Sports Association in consultation with Academic Section will reallocate proficiency to such students.

i) Sports and Games Activities

Athletics	Football	Squash	Tennis
Badminton	Gymnastics & Weight Lifting	Swimming*	Volleyball
Basketball	Hockey	Table Tennis	Yogic Exercises
Cricket	Rowing (Boating) *		

*Non-Swimmers are not allowed to take these proficiencies, as swimming test has to be cleared.

ii) Hobbies Activities

Electronics	Gardening	Philately and Numismatics	Star Gazing
Fine Arts	Modeling	Photography	Web Designing

iii) Cultural Activities

Design	Drama	Literary	Music	Organization & Management
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iv) Himalayan Explorers Club

Mountaineering and Trekking	Rangering	Rovering	Unarmed Combat
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Table-2: Credits for B.Tech. Programmes

CURRICULAR COMPONENTS		Credits
(a) Institute Core (IC) Courses		
i.	Humanities and Social Sciences (HSSC)	04
ii.	Basic Sciences (BSC)	08+08*
iii.	Engineering Science (ESC)	04+12*
iv.	General Sciences (GSC)	03
		*Department Specific
Total		39
(b) Departmental Core Courses (DCC)		
i.	Class Contact Core courses	60-64
ii.	Introduction to (Discipline) Engineering/Sciences	02
iii.	Engineering Analysis and Design	03-04
iv.	Industry Oriented Problem/Lab based project/Practical Problem/Case Study	03-04
v.	Technical Communication	02
vi.	B.Tech. Project	12
vii.	Educational Industrial Tour	Satisfactory/Unsatisfactory
viii.	Practical Training/Internship	02
Total		84-88
(c) Humanities, Social Sciences and Management Elective Courses (HSSMEC)		
i.	Humanities and Social Sciences	03
ii.	Management Studies	03
Total		06
(d) Open Elective Course (OEC)		03
(e) Departmental Elective Courses (DEC)		22-26
(f) Minor Specialisation Courses (MSC)/Departmental Honour Courses (DHC)		18-20
(g) Co-curricular Activities (CCA)		
i.	Discipline (To be awarded after Final Year)	02
ii.	NCC/NSO/NSS (First Year)	02
iii.	NSO/NSS/Proficiency (Second year to Final Year and to be awarded after Final Year)	02
Total		06
Grand Total		160-170
(For those who do not opt for minor specialisation/honours)		
Grand Total		178-190
(For those who opt for degree minor specialisation)		
Grand Total		178-190
(For those who opt for degree with honours)		
Grand Total		192-200
(For IDD/IMS/IMT)		

Table-3: Institute Core Courses for B.Tech. Programmes

Curricular Component	Credits	Contact Hours/Week			
		L	T	P	Total
(i) Humanities and Social Sciences (HSSC)					
1. Communication Skills (Basic/Advanced)	02	1	0	2	03
2. Ethics and Self Awareness	02	2	0	0	02
Total	04	3	0	2	05
(ii) Basic Sciences (BSC)					
1. Mathematics-I	04	3	1	0	04
2. Mathematics-II (Module form)	04	3	1	0	04
3. Department specific course-I*	04	3	1	0(2/2)	04
4. Department specific course-II*	04	3	1	0(2/2)	04
(* Either from Physics or Chemistry)					
Total	16	12	04	0(2)	16
(iii) General Sciences (GSC)					
1. Introduction to Environmental Studies	03	3	0	0	03
Total	03	03	0	0	03
(iv) Engineering Sciences (ESC)					
1. Department specific course on Computer Programming	04	3	0	2	05
2. Department specific course-I	04	3	1	0	04
3. Department specific course-II	04	3	1	0	04
4. Department specific course-III	04	3	1	0	04
Total	16	12	3	2	17

Table-4: Institute Elective Courses

	Credits	Contact Hours/Week			
		L	T	P	Total
(i) Humanities, Social Sciences and Management Elective Courses (HSSMEC)					
1. Course from Humanities and Social Sciences	03	2	1	0	03
2. Course from Management Studies	03	3	0	0	03
Total	06	5	1	0	06
(ii) Open Elective Course (OEC)					
1. Any one course from Basic Sciences, Engineering Sciences, Humanities and Social Sciences and Management streams (The Student can select any course from this basket)	03	3	0	0	03
Total	03	3	0	0	06

Course Coding

A course is identified by a course code designated by a string of alpha-numeric characters and a course title. In a course code, first two letters of the string indicate the Academic Department/Centre offering the course and the last three numbers designate particular course.

The letters symbolising various Academic Departments/Centres offering courses are:

AH	Alternate Hydro-Energy Centre	ES	Earth Sciences
AR	Architecture and Planning	EQ	Earthquake Engineering
AS	Applied Science and Engineering	HS	Humanities and Social Sciences
BM	Management Studies	HY	Hydrology
BT	Biotechnology	MA	Mathematics
CH	Chemical Engineering	MI	Mechanical and Industrial Engineering
CE	Civil Engineering	MT	Metallurgical and Materials Engineering
CS	Computer Science and Engineering	NT	Nanotechnology
CY	Chemistry	PE	Polymer and Process Engineering
EE	Electrical Engineering	PH	Physics
EC	Electronics and Computer Engineering	PP	Paper Technology

Course Number

- The courses under BSC category are numbered with the prefix of the department code and 0 followed by two digits. For example, the course Mathematics-I is numbered as MA-001.
- For the other courses, the first digit will correspond to the level (year) at which a course is normally offered. The last two digits denote the number of the course, which will usually be odd for courses offered in the Autumn Semester and even for courses in the Spring Semester. For example, the course, 'Introduction to Civil Engineering, offered in first year Autumn Semester' is numbered as CE-101.

Abbreviations and Notations

Credits: Cr

Teaching Engagements

Every course maintains some teaching schedule for which weekly contact hours are decided for delivering lectures, engaging tutorials and performing practicals to make learning in a course more effective.

L: Lecture T: Tutorial P: Practical

In the syllabi, the information regarding number of course credits and contact hours per week is denoted as (for example):

5 (3 - 1 - 2)

Credits (L - T - P)

Course Categories

All courses of Undergraduate, Integrated Dual-Degree, Integrated M.Tech. and Integrated M.Sc. programmes are categorized according to their nature. The courses are represented by the following notations:

BSC	Basic Sciences Course
CCA	Co-Curricular Activity
DCC	Departmental Core Course
DEC	Departmental Elective Course
DHC	Department Honour Course
DSC	Department Specific Course

ESC	Engineering Sciences Course
GSC	General Sciences Course
HSSMC	Humanities, Social Sciences and Management Course
HSSMEC	Humanities, Social Sciences and Management Elective Course
MCC	Management Core course
MEC	Management Elective Course
MSC	Minor Specialisation Course/ Master Specialization Course
OEC	Open Elective Course
SEM	Seminar
DIS	Dissertation

Weights for Course Evaluation

Evaluation in every course is based on the weights assigned to various components of the course curriculum. These components are designated as under:

CWS	Class Work Sessional	PRS	Practical Sessional
MTE	Mid Term Examination	ETE	End Term Examination
PRE	Practical Examination		

In general, the relative weights assigned to different components of all the courses except for the courses of Department of Architecture and Planning are as given in the table below:

S. No.	Course Type			Examination		Relative Weights				
	L	T	P	TH	PR	CWS	PRS	MTE	ETE	PRE
1.	3 or 2	1 or 0	0	Yes	-	25	-	25	50	-
2.	3 or 2	1 or 0	2/2	Yes	Yes/No	20	20	20	40	-
3.	3 or 2	1 or 0	02	Yes	Yes/No	15	25	20	40	-
4.	-	-	4 or 6	-	Yes	-	50	-	-	50

An example is given below: '**MI-103: Programming and Data Structures**' refers to a course offered by the Department of Mechanical and Industrial Engineering to the students of first year of the B.Tech. (ME/PI) programmes and is offered in the autumn semester.

S.No.	Teaching Scheme		Subject Area	Credits	Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights				
	Subject Code	Course title			L	T	P	Theory	Practicals	CWS	PRS	MTE	ETE	PRE
1.	MI-103	Programming and Data Structures	ESC	4	3	0	2	3	0	15	25	20	40	-

Credit System

The Institute follows modern methods of continuous evaluation through a credit system in all its UG, 5-year Integrated Dual-degree, Integrated M.Sc. and Integrated M.Tech. programmes. The system offers flexibility to progress at a pace commensurate with the capabilities of a student, subject to minimum credit requirements. There is no annual/semester pass or fail. The award system follows letter grades on a 10-point scale where the performance is measured in terms of weighted grade point averages (SGPA and CGPA). A student has to satisfy minimum CGPA and earned credit requirements to be eligible for the award of degree (Table-2). Department-wise teaching schemes for the first year autumn semester and the syllabi of the five courses common to all undergraduate programmes offered in Autumn semester of the first year are given at the end.

ORDINANCES FOR THE UNDERGRADUATE (UG), INTEGRATED DUAL-DEGREE (IDD), INTEGRATED M.TECH. (IMT) AND INTEGRATED M.Sc. (IMS) PROGRAMMES

Short Title & Commencement	1	(i)	These ordinances shall be called the Ordinances for the four-year Undergraduate, five-year Integrated Masters and the five-year Integrated Dual-Degree Programmes of the Indian Institute of Technology Roorkee.
		(ii)	These ordinances shall come into force with effect from such date as the Senate/ Board may appoint in this behalf.
Definitions <i>(Unless the context requires otherwise)</i>	2	(i)	“Applicant” shall mean an individual who applies for admission to any undergraduate (UG) or Integrated dual-degree (IDD) or Integrated Masters degree (IMD) programme of the Institute;
		(ii)	“Board” shall mean the Board of Governors of the Institute;
		(iii)	“CAPC” shall mean the Centre’s Academic Programme Committee;
		(iv)	“Casual Student” shall mean a student who is registered for a degree in a recognized Institution/ University in India or abroad and is officially sponsored by his parent institute to avail laboratory and other academic facilities or for attending a formal set of courses;
		(v)	“CFC” shall mean Centre’s Faculty Committee;
		(vi)	“CGPA” shall mean the cumulative grade point average of a student;
		(vii)	“Coordination Committee” shall mean the committee of the faculty members involved in a course;
		(viii)	“Council” shall mean the Council of the Indian Institutes of Technology;
		(ix)	“Course” shall mean a curricular component identified by a designated code number and a title;
		(x)	“Course Coordinator” shall mean a faculty member who shall have full responsibility for the course, coordinating the work of other faculty member(s) involved in that course, including examinations and the award of grades;
		(xi)	“CRC” shall mean Centre’s Research Committee;
		(xii)	“Degree” shall mean the Bachelors degree viz. B.Tech., or the Integrated Masters degree viz M.Sc. or M.Tech., or the Integrated dual degrees viz. B.Tech. and M.Tech./M.B.A., and such other degrees of the Institute as may be approved by the Board from time to time;
		(xiii)	“DA” shall mean the Dean, Academics;
		(xiv)	“DAC” shall mean Department Administrative Committee;
		(xv)	“DFC” shall mean Department Faculty Committee;
		(xvi)	“Direct Admission Student” shall mean the student who is admitted directly from abroad and, not through JEE, and registered for undergraduate, or Integrated Masters or Integrated dual-degree programmes for full time study;
		(xvii)	“DAPC” shall mean the Departmental Academic Programme Committee of

		a Department;
(xviii)		“ DRC ” shall mean the Departmental Research Committee;
(xviii)		“ DOSW ” shall mean the Dean of Students' Welfare;
(xix)		“ Faculty Advisor ” shall mean a teacher nominated by the Department/Academic Centre to advise a student on the courses to be taken by him and other matters related to the academic programme;
(xx)		“ Grade Moderation Committee ” shall mean the committee appointed by the Department/Academic Centre to moderate grades awarded by the Course Coordinators in different courses in a semester at a given level of a curriculum;
(xxi)		“ IAPC ” shall mean the Institute Academic Programme Committee of the Institute.
(xxii)		“ IAPEC ” shall mean Institute Academic Performance Evaluation Committee.
(xxvi)		“ ITTC ” shall mean Institute Time Table Committee.
(xxv)		“ IRC ” shall mean Institute Research Committee
(xxvi)		“ Institute ” shall mean the Indian Institute of Technology Roorkee;
(xxvii)		“ Integrated Dual Degree or IDD ” shall mean the five-year Integrated Dual Degrees, namely, B.Tech. (parent discipline) and M.Tech. (specialisation of the parent discipline)/MBA of the Institute;
(xxviii)		“ Integrated Masters Degree or IMD ” shall mean the five-year Integrated Masters Degree, namely M.Sc. and M.Tech. in different disciplines of the Institute;
(xxix)		“ JAB ” shall mean the Joint Admission Board of all the IITs for admission of students to various academic programmes through Joint Entrance Examination (JEE);
(xxx)		“ JEE ” shall mean the Joint Entrance Examination (Advanced) for admission to undergraduate (B.Tech./B.Arch.), five-year Integrated Dual Degree (B.Tech. and M.Tech./M.B.A.), Integrated M.Sc. and Integrated M.Tech. programmes of the Indian Institutes of Technology;
(xxxi)		“ OBC ” shall mean the other backward classes as notified by the Government of India from time to time;
(xxxii)		“ PD ” shall mean the persons with disability as specified by the Government of India from time to time.
(xxxiii)		“ PG ” shall mean Post Graduate;
(xxxiv)		“ PFC ” shall mean Program Faculty Committee;
(xxxv)		“ Student ” shall mean a student registered for an undergraduate, Integrated Masters or Integrated Dual-Degree programme for full-time study leading to the Bachelors degree or the Masters degree or the dual Bachelors and Masters degrees, as the case may be;
(xxxvi)		“ Scheme of Teaching and Examination ” shall mean the scheme of teaching and examination for a branch of study as approved by the Senate;

		(xxxvii)	“ SC/ST ” shall mean the scheduled castes and scheduled tribes as notified by the Government of India from time to time;
		(xxxviii)	“ SGPA ” shall mean the semester grade point average;
		(xxxix)	“ UG ” shall mean Under Graduate; Note: ‘He’ & ‘His’ imply ‘he’/‘she’ and ‘his’/‘her’, respectively.
Ordinances	3	(1)	The Institute shall offer such UG, IDD and IMD programmes and of such minimum duration as the Board may approve on the recommendation of the Senate either on its own or on the initiative of a Department/Academic Centre, and/or on the direction of the Board/Council/Government of India. Provided that the Institute Academic Programme Committee (IAPC) shall recommend all such programmes. Provided further that an interdisciplinary programme may be proposed by a Department/an Academic Centre or by a committee appointed by the Director for the consideration of the IAPC, the Senate and the Board.
		(2)	The procedure for starting a new programme, temporarily suspending a programme or phasing out a programme shall be such as may be laid down in the regulations.
		(3)	The minimum entry qualifications and the policy and procedure of admission to UG, IDD and IMD programmes shall be such as may be specified by the JAB/Council/Government of India and/or laid down in the regulations.
		(4)	A UG or an IDD or an IMD student shall be required to earn a minimum number of credits through various curricular components like teaching/laboratory courses, seminar, project, etc. at the Institute or at such other Institutions as have been approved by the Institute. For an IMD or an IDD student, the dissertation, project and other similarly designated academic activities shall have to be undertaken under the guidance of a supervisor(s) from the Institute. Provided that an IMD or an IDD student may be permitted by the DAPC/CAPC to carry out in full or part of his dissertation outside the Institute. In such cases, an additional supervisor from outside Organization/Institute, if considered necessary, may be appointed by the DAPC/CAPC on the recommendation of the supervisor from the Institute.
		(5)	A student (UG/IDD/IMD) shall be required to complete all the requirements for the award of the Bachelors Degree or the Integrated Masters Degree, viz M.Sc. or M.Tech. or the Integrated Dual Degrees, viz. B.Tech. in parent discipline and M.Tech. in a specialized sub-discipline of the parent discipline or M.B.A., as the case may be, within such period as may be specified in the regulations, including those credits earned at such other institutions as have been recognized by the Institute for this purpose.
		(6)	The date of initial registration for the UG or IDD or IMD programmes shall normally be the date on which the student formally registers for the first time. This date shall be construed as the date of joining the programmes for all intents and purposes.
		(7)	A student shall be required normally to attend every lecture, tutorial and practical class. However, for late registration, sickness or other such exigencies, absence may be allowed as provided for in the regulations.
		(8)	A student (UG/IDD/IMD) may be granted such scholarship/studentship/ assistantship/stipend, etc. and awarded such prizes and medals as may be

			specified in the regulations in accordance with the directions of the Government of India and/or the decision of the Council/ Board from time to time.
		(9)	The procedure for the admission of a student or a direct admission of a student to a programme (UG/IDD/IMD) shall be such as may be decided by the Joint Admission Board of the IITs and/or as specified in the regulations; the casual students may be allowed access to academic programmes in the manner as provided for under the regulations.
		(10)	In case all the reserved seats for SC/ST category are not filled even with relaxed admission norms, the students in this category who satisfy certain minimum norms specified for this purpose may be offered admission to one year preparatory programme. On successful completion of the preparatory course, these students may be offered direct admission against the unfilled quota of seats as provided for in the regulations.
		(11)	The procedure for the withdrawal from a programme (UG/IDD/IMD), rejoining the programme, the award of grades and the SGPA/CGPA, the examination and all such matters as may be connected with the running of a programme (UG/IDD/IMD) shall be such as may be specified in the regulations.
		(12)	The award of the UG degree or the Integrated Masters Degree or the Integrated Dual-Degree to an eligible candidate shall be made in accordance with the procedure laid down in the regulations.
		(13)	A student admitted to the UG or the IDD or the IMD programme shall abide by the "Standing Orders for Students" issued by the Institute from time to time. These standing orders shall deal with the discipline of the students in the Bhawans /Hostels, Departments/ Academic Centres, the Institute premises and outside. The Standing Orders may also deal with such other matters as are considered necessary for the general conduct of the students, and co-curricular and extra-curricular activities. These Standing Orders shall be approved by the Director on the recommendation of the Dean of Students' Welfare.
		(14)	Notwithstanding anything contained in the above Ordinances, no regulations shall be made in contravention of the decision of the Board/ Council and/or the direction of the Government of India in regard to the duration of the UG/IDD/IMD programmes, the amount and number of scholarship/assistantship and the number of studentships and the procedure of admission and the percentage of students of various categories, viz. reserved (SC/ST, OBC, PD) and unreserved categories. The regulations for the UG/IDD/IMD programme shall be framed by the IAPC, which shall be considered and approved by the Senate.
		(15)	In special circumstances, the Chairman of the Board may, on behalf of the Board, approve amendment, modification, insertion or deletion of an Ordinance(s), which in his opinion is necessary or expedient for the smooth running of a programme: Provided that all such changes shall be reported to the Board in its next meeting for approval.

**REGULATIONS FOR THE UNDERGRADUATE, INTEGRATED DUAL-DEGREE AND
INTEGRATED MASTERS DEGREE PROGRAMMES**

Short Title & Commencement	1	(1)	These regulations shall be called the regulations for the UG, IMD and the IDD programmes of the Institute.
		(2)	These regulations shall come into force on such date as the Director may appoint in his behalf.
Undergraduate Programmes	2a	(1)	The Institute may offer such undergraduate programmes leading to Bachelors in Technology, B.Tech., and Bachelors Degree in Architecture, B. Arch. as may be degree approved by the Senate and the Board.
		(2)	The list of currently offered UG programmes and the broad course structure are given in Table-1, Table-2 and Appendix-A. The structure and programme may be amended/ modified in accordance with the decisions of the Senate and the Board.
		(3)	The duration of UG programmes leading to degrees of B.Tech. and B.Arch. are normally four and five years, respectively. However, the maximum duration for the UG programme is six years for the degree of B.Tech. and seven years for the degree of B.Arch. from the date of initial registration. The maximum duration of the programme includes the period of withdrawal, absence and different kinds of leaves permissible to a student, but it shall exclude the period of rustication. The duration for the UG programme may be altered in accordance with the decision of the Board/Council/Government of India.
Integrated Dual Degree Programmes	2b	(1)	The Institute may offer such five-year IDD programmes leading to Bachelors degree in Technology, i.e. B.Tech., in a parent discipline and Masters degree in Technology, i.e., M.Tech. in a specialization of the parent discipline or M.B.A., as may be approved by the Senate and the Board.
		(2)	The currently offered IDD programme and the broad course structure are given in Table-1 and Table-2 respectively. The structure and programmes may be amended/ modified in accordance with the decisions of the Senate and the Board.
		(3)	The duration of an IDD programme leading to dual degree of B.Tech. and M.Tech./M.B.A. is normally five years and the maximum duration is seven years from the date of initial registration. The maximum duration of the programme includes the period of withdrawal, absence and different kinds of leave permissible to a student, but it shall exclude the period of rustication. The duration for the IDD programme may be altered in accordance with the decision of the Board/ Council/ Government of India.
Integrated M.Tech. Programmes	2c	(1)	The Institute may offer such five-year Integrated M.Tech. programmes in Science/ Technology, as may be approved by the Senate and the Board.
		(2)	The list of currently offered Integrated M.Tech. programmes and the broad course structure are given in Table-1 and Table-2. The structure and programmes may be amended/ modified in accordance with the decisions of the Senate and the Board.
		(3)	The duration of an Integrated M.Tech. programme is normally five

			years and the maximum duration is seven years from the date of initial registration. The maximum duration of the programme includes the period of withdrawal, absence and different kinds of leave permissible to a student, but it shall exclude the period of rustication. The duration for the Integrated M.Tech. programme may be altered in accordance with the decision of the Board /Council/Government of India.
Integrated M.Sc. Programmes	2d	(1)	The Institute may offer such five-year Integrated M.Sc. programmes leading to Masters Degree in Science, as may be approved by the Senate and the Board.
		(2)	The list of currently offered Integrated M. Sc. programmes and the broad course structure are given in Table-1 and Table-2. The structure and programmes may be amended/ modified in accordance with the decisions of the Senate and the Board.
		(3)	The duration of an Integrated M.Sc. programme leading to Masters degree in Sciences is normally five years and the maximum duration is seven years from the date of initial registration. The maximum duration of the programme includes the period of withdrawal, absence and different kinds of leave permissible to a student, but it shall exclude the period of rustication. The duration for the Integrated M.Sc. programme may be altered in accordance with the decision of the Board /Council /Government of India.
Institute Academic Programme Committee (IAPC)	3		The Institute Academic Programme Committee (IAPC) shall be a sub-committee of the Senate, which shall consider all the academic matters recommended by the Departmental/Centre's Academic Programme Committee (DAPC/CAPC) and coordinate the activities related to UG, PG, IDD and IMD programmes. It shall also consider and recommend to the Senate the board framework and policies related to the UG, PG, IDD and IMD Programmes offered by the Institute.
Departmental/ Centre's/ Programme Faculty Committee (DFC/CFC/PFC)	4		There shall be a Faculty Committee consisting of all the faculty members of a Department/Centre, which may be called the Departmental/Centre's Faculty Committee (DFC/CFC). It shall be constituted by every Academic Department /Centre. For an interdisciplinary programme, a Programme Faculty Committee (PFC) shall be constituted by the Dean, Academics and it shall look after all academic matters pertaining to that programme. A Programme Coordinator shall be appointed by the Director in consultation with the Dean, Academics and the Heads of the concerned Departments/Centres to look after all the administrative and academic matters related to the interdisciplinary programme. The Programme Coordinator shall exercise the functions of the Head of a Department/ Chairman, DAPC/CAPC for such a programme. The DFC/CFC shall be responsible for considering all the policy issues concerning academic and research programmes of the Department/ Academic Centre. The DFC/CFC shall formulate academic programmes and courses as recommended by the DAPC/CAPC and DRC/CRC to it and send its recommendation to the Dean, Academics for his consideration and necessary action.

Departmental/ Centre's Academic Programme Committee (DAPC/CAPC)	5		The Departmental/Centre's Academic Programme Committee (DAPC/CAPC) shall be constitute by the DFC/CFC/PFC to look after all academic matters pertaining to the UG, PG, IDD and IMD programmes offered by the Department/Centre. Where DAPC does not exist, the functions of the DAPC and its Chairman shall be performed by the Head of the Department/Centre in consultation with a Committee proposed by him and approved by the Dean, Academics, for this purpose, if necessary.
Phasing Out of a Programme	6		The phasing out of any UG, PG, IDD and IMD programme may be considered by the Senate on the recommendation of a DFC/CFC/PFC and the IAPC. Also, a programme may be phased out by the Senate on the recommendation of the IAPC if, consecutively for three years, the number of students registering for the programme is less than 40% of the sanctioned intake of the students.
Starting a New Programme	7	(1)	The Board may approve the starting of a new programme or a modified programme in lieu of the old phased-out programme on the recommendation of the DFC/CFC/PFC, the IAPC and the Senate.
		(2)	A new programme may be considered and recommended by the Senate to the Board for its consideration and approval. Such a proposal will be initiated by a Department/Academic Centre through its DFC/CFC/PFC and considered and recommended by the IAPC.
		(3)	An interdisciplinary programme may be proposed by a Department /Academic Centre in consultation with other participating Department(s)/Academic Centre(s), or by a group of Department(s)/Academic Centre(s), or by a Committee appointed by the Director for the consideration of the IAPC and the Senate for their recommendation to the Board of Governors for obtaining its approval.
Semester System	8	(1)	The academic programmes in the institute shall be based on semester system: Autumn and Spring semesters in a year with winter and summer vacations. A number of courses shall be offered in each semester.
		(2)	Each course shall have a certain number of credits assigned to it depending upon the academic load of the course assessed on the basis of weekly contact hours of lecture, tutorial and laboratory classes, assignments or field study and/or self study.
		(3)	The courses offered in a semester shall be continually assessed and evaluated to judge the performance of a student.
Admissions	9	(1)	Admission to all Under Graduate, Integrated Dual-Degree, Integrated Masters programmes shall be made through the JEE. The policy of admissions, the eligibility thereof and other issues pertaining to JEE shall be such as may be approved by JAB and/or directed by the Council/Government of India.
		(2)	Foreign nationals either residing in India or abroad or Indian nationals residing abroad may be admitted to any UG or IDD or IMD programme in accordance with the policy guidelines laid down by the Council.
Refund of Fees	10		The fees and other charges deposited by a candidate seeking

			admission will be refunded if the student does not join the programme and leaves the Institute by applying for refund on or before the date of registration. The Institute shall decide the amount to be refunded but no refund of fees will be permissible to students who have registered for the programme and leave thereafter. In such cases only caution money will be refunded at the end of the semester.
Allotment of Branch/ Programme and its Change	11	(1)	The allotment of branch/programme to a student shall be made at the time of counselling by JEE (Advanced) on the basis of merit according to the preference of the student and the availability of seats.
		(2)	A student admitted through JEE (Advanced), except those in the B.Arch. Programme, shall be eligible for change of Branch/Programme at the end of the Autumn Semester of the First year provided that the student satisfies the following criteria: (i) He/ She has earned all the specified credits in the course structure at the end of the Autumn Semester. (ii) He/ She has not failed in any course. (iii) He/ She has not been penalized for indiscipline.
		(3)	The change of branch/programme of a student shall be against the number of vacancies or two (02) seats in the other programme, whichever is
		(4)	The vacant seats in a programme shall be filled strictly on the basis of merit in that category. However, the extra seats (if any and maximum two (02) in any programme) shall be filled on the basis of combined merit.
		(5)	The eligible applicants shall be allowed change of branch/programme strictly on the basis of inter-se-merit as reflected in their SGPA. In case the SGPA of more than one student seeking the change of branch/programme is the same, their inter-se-merit shall be decided on the basis of their ranks in the JEE (Advanced).
Academic Registration	12	(1)	Every student shall register in each semester on the scheduled date as per academic calendar till the completion of the degree.
		(2)	In case, a student is proceeding on summer internship, late registration may be allowed only up to a maximum of 10 working days after the scheduled registration date without late registration fee by Dean Academics. If the student does not register on scheduled date he has to pay late registration fee as per rule. Registration in absentia may be permitted by the Dean, Academics.
Academic Registration	13		A Programme Advisor shall be appointed for each programme by the Head of the Department/Centre on the recommendation of DAPC/CAPC who will be responsible for advising the students for registration.
Course Coordinator	14		Every course offered by a Department/ Academic Center shall be coordinated by a Course Coordinator appointed by the Head of the Department/Centre on the recommendation of DAPC/CAPC. The Course Coordinator shall have full responsibility for the course. He shall coordinate the work of other faculty member(s) involved in that

			course in respect of their participation in various activities related to the course including continuous evaluation of the students through tests, quizzes, assignments, mid-term and end-term examinations and the award of the grades.
Chairman, IAPEC	15		All the Grade Moderation related work, including that of First year and preparatory courses shall be looked after the Chairman, Institute Academic Performance Evaluation Committee.
Chairman, ITTC	16		All the Time Table related work, including that of First year and preparatory courses shall be looked after by the Chairman, Institute Time Table Committee.
Advisor, SC/ST Students of Preparatory Course	17		The Chairman, IAPEC will also perform the duties of Advisor for the SC/ST students of the preparatory course.
Subject Registration	18	(1)	Every student shall register for the courses that he/she wants to study for earning credits and his/her name will appear in the roll list of each of these courses. No credit shall be given if a student is allowed to attend a course for which he or she is not registered. The performance of a student in all the courses, for which he/she has registered, shall be included in his/her grade card.
		(2)	Student should first register for the courses in which he/she has been declared failed in the previous year/semester as back papers and then register for the remaining courses of the semester to make up the total required credits for that semester. However, a student shall not be allowed to register for the courses offered to students of third year, if he/she has not cleared all the courses of first year and a student shall not be allowed to register for the courses offered to students of fourth year, if he/she has not cleared all the courses of second year and a student shall not be allowed to register for the courses offered to students of fifth year, if he/she has not cleared all the courses of third year
		(3)	Registration of courses to be taken in a particular semester shall be carried out according to specified schedule. Late registration of courses is allowed only on payment of necessary fees. In-absentia registration may be allowed only in rare cases such as illness or any other contingencies, at the discretion of the Dean, Academics.
		(4)	The Dean, Academics shall assign the time slots for the next semester and inform the Departments/ Academic Centres, who shall then assign the teachers and decide the time schedule of the courses to be offered in the next semester. These tasks shall be completed as per Academic Calendar and the time schedule shall be made available by the department to the academic section. It will also be displayed on the notice board of the department for the students at least one week prior to the date of registration.
		(5)	Those students who are joining the first year of the UG or IDD or IMD programme shall complete the registration procedure on a specified registration date as per academic calendar
		(6)	Under special circumstances, the students may be allowed late registration by the Dean, Academics till a specified date, by paying a late fee of Rs.1000/-, along with other necessary fees

		(7)	A student may register for a minimum of 12 credits and a maximum of 24 credits. But on the recommendation of the department/centre, Dean, Academics, may allow a student to register for a maximum of 28 credits in not more than two semesters during the entire programme for fulfilling the requirements of minimum earned credits. In case the student is not allowed to register the courses of current semester due to back paper(s) of previous year, he/she may register for credits less than 12 depending on number of back papers. However, the credits for NCC/ NSO/NSS/Rangering, proficiency and discipline shall not be counted for this purpose.
		(8)	A student shall have the option to add or delete courses from his/her registration during the first ten days of the semester as per Academic Calendar.
		(9)	Before the commencement of classes and at the time of registration, Academic Section shall give each student a registration record which shall be the official record of the courses registered; any change like adding or dropping a course will be marked on this registration record by the student and countersigned by the Chairman, DAPC/CAPC
		(10)	At the time of completing the registration form or any subsequent change in the registration, every student shall consult his/her Programme Advisor, who shall be appointed by the Chairman, DAPC/CAPC of a department/centre. The Programme Advisor shall advise the student in regard to the minimum and the maximum number of total and lecture credits to be registered for in the context of his/her past performance, backlog of courses, SGPA/CGPA and individual interest
Minimum Number Students Requirement for an Elective Course	19		An elective course in a Department/ Academic Centre shall run only if a minimum of 15 students register for it in a semester whereas an Institute Elective/Open Elective shall run only if a minimum of 25 students register for it in a semester. However, under special circumstances a course may run with a fewer students too with prior permission of Dean, Academics.
Course Codes	20		Each course offered by the Institute shall be identified by a course code, normally consisting of a string of six alpha-numeric characters followed by a course title. The first two characters in a course code shall be capital letters identifying the responsible Department/ Academic Centre offering /coordinating the course. The next three characters are numerical digits: the first one normally specifies the year of study and the last two digits specify the course number and the semester in which the course shall be offered. Normally, odd number in the course code will indicate that the course will be offered in the Autumn semester and the even number will indicate that the course will be offered in the Spring semester of the year. For all the UG, IDD, and IMD programmes normally, 100 series shall be for the courses in first year, 200 for the courses in the second year and so on. The sixth character may be used in few cases to differentiate courses of same nature. The first numerical digit for a preparatory course shall be zero. In case of Institute electives, the code shall begin with 'I' followed by two characters indicating the code of the Department

			/Academic Centre offering /coordinating the course, a digit indicating the year and then two digit code number indicating the elective number offered by the Department/Centre.
Course Credits	21		Each course shall have an integer number of credits, which reflects its weight. The number of credits of a course in a semester shall ordinarily be calculated as under:
		(1)	Lectures/Tutorials: One lecture hour per week shall normally be assigned one credit. One hour of tutorial per week shall be assigned one credit. However, the credits may be adjusted further by taking into consideration the quantum of work required to be put in by a student for learning the course
		(2)	Practicals: One laboratory hour per week shall normally be assigned half a credit. Not more than three credits may be assigned to a practical course having only laboratory component. The courses having two/three hours of contact every alternate week shall have one credit only.
		(3)	Special courses like project, practical training, group discussion, discipline, proficiency, National Cadet Corps (NCC)/ National Service Scheme (NSS)/ National Sports Organization (NSO) in the UG, IDD and IMD programme shall be treated as any other course and shall be assigned such number of credits as may be approved by the Senate.
Course Evaluation	22	(1)	A student shall be evaluated for his/her academic performance in a course through tutorials, practicals, home work assignments, term papers, field work, seminars, quizzes as Class Work Sessionals (CWS) and Practical Sessionals (PRS), Mid Term Examination (MTE), End Term Examination (ETE), and Practical Examinations (PRE) as applicable according to the guidelines formulated by IAPC for this purpose.
		(2)	The distribution of weights for each component shall be decided and announced by the Course Coordinator at the beginning of the course, subject to such stipulations as are given in the Scheme of Teaching and Examination for a given programme.
		(3)	The criteria for evaluation of any subject be declared in the very first week of commencement of the classes.
		(4)	Answer books of the test and examination cannot be written in Pencil.
		(5)	Evaluation of marks should not be in pencil.
		(6)	A student can go through his/her answer script of MTE and the end term examination and point out any discrepancy in its evaluation on a day fixed by the Course Coordinator/ Chairman, Grade Moderation Committee. Objections will be entertained right then, and not even on the next day.
		(7)	The duly evaluated answer scripts of MTE examination be returned within a week from the date of the MTE.
		(8)	Head of Departments/Centres to ensure that end term examination answer books are shown to the students before the day of moderation, on a date to be specified and prominently displayed by the respective teachers. Further, the answer books be preserved by

			the concerned teacher for six months, before handing over to departmental stock for disposal.
		(9)	The answer script of the end term examination shall not be shown to a student after finalization of the grades by the Grade Moderation Committee.
		(10)	The practical/field training shall normally be evaluated through the quality of work carried out, the report submission and presentation(s) but the project shall be evaluated normally by mid term seminar(s), quality of work carried out, project report submission and the viva-voce examinations.
Grading System	23	(1)	The academic performance of a student shall be graded on a 10-point scale following guidelines given in Appendix-B. The letter grades and their equivalent grade points are listed in Table-5.
		(2)	The letter Grades awarded to a student in all the courses (except audit courses) shall be converted into a semester and cumulative performance index called the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA), to be calculated by the procedures given in Appendix-B of these regulations.
		(3)	At the end of the programme, a student with CGPA of 8.5 and above shall be awarded 'First Division with Distinction' and a student with CGPA between 6.5 and 8.5 shall be awarded "First Division".
		(4)	All the passing out students of a class shall be given ranks as " Rank XX in a class of YY students ".
Courses of Special Nature	24		The UG, IDD and IMD programmes may contain the following courses of special nature in different curricula some of which are already indicated in section 21(3) of these regulations.
			NCC/NSO/NSS/Rangering
		(1)	Every student shall register for the specified number of credits in the first year, for participation in the NCC / NSO /NSS/ Rangering for the overall development of his/her personality. Students shall be admitted to NCC / NSO /NSS/ Rangering on the basis of their preference and by virtue of their aptitude and abilities as decided by a committee constituted by DOSW. The student shall be continually evaluated for his/her participation and awarded grade following the procedures specified. There shall be at least 80 hours of engagement in an academic year and the attendance regulations for the courses shall apply. This requirement shall be completed in the first year. If, however, a student is not able to complete this requirement in the first year, he/she shall complete it by the end of second year failing which he/she will not be allowed to register in the fifth semester.
			Proficiency/NSO/NSS
		(2)	Every student shall register for Proficiency/NSO/NSS of 2-credits from second year onwards and the grade will be awarded at the end of Final Year. In case of proficiency/NSO, minimum engagement shall be at least 5 hours per week and it will be evaluated continuously as specified for the courses. A special course on 'Hindi' may be offered to foreign / non-Hindi speaking students under proficiency
			Industry Oriented Problem//Practical Work/Case Studies

	(3)	The UG curriculum contains a course of 3-4 credits on Industry Oriented Problem/ Practical Work/Case Studies as a departmental core course, which may be offered in any semester during the third and fourth years of the programmes to carry out a design and/or fabrication type of project or laboratory course
Practical/Field Training		
	(4)	Both UG and IDD curricula shall contain a 2-credit component of departmental core course on Industrial/Field Training for 6-10 weeks, generally carried out during the summer vacation following the spring semester of third year. It would be desirable for the students to undergo training outside the Institute. Every effort should be made by the students and the concerned department for arranging a summer internship outside IIT Roorkee. Under special circumstances, a student can undergo training in an Academic Department/Center within the Institute. The evaluation of this course will be carried out in the autumn semester of fourth year. The procedure for evaluation of practical/field training is given in Appendix-E1.
Technical Communication		
	(5)	All UG, IDD and IMD curricula shall contain a 2-credit component of departmental core course on Technical Communication generally offered in the Autumn Semester of the third year of the programme. The course shall be conducted in the form of literature survey, report writing, PPT and seminar on any technical topic of interest. The procedure for the conduct and evaluation of this course is given in Appendix-E2.
Educational Tour		
	(6)	Educational Tour is a non-credit course in the structure, but it is a compulsory course and the student will have to earn at least a satisfactory grade in this course.
Self Study Course		
	(7)	One self study course may be offered under special circumstances from the list of regular courses of study, to a student in his/her final semester or thereafter. This course shall be offered only if approved by the Dean, Academics on the recommendation of the Chairman, DAPC/CAPC with the provision that the course evaluation process will not be diluted. The guidelines for the allocation and evaluation of self study course are given in Appendix-E3
Additional Course		
	(8)	A student of a UG/IDD/IMD programme may register in a few additional courses within prescribed limits either as audit courses or credit courses as advised by the Programme Advisor. The guidelines for the grant of these courses and award of grades are given in Appendix-E4
B.Tech. Project		
	(9)	Each UG programme shall contain a 12-credit major project as a component of the departmental core course, generally offered in the

			fourth year of the programme. The procedure for the conduct and evaluation of major project is given in Appendix-E5. The course will be evaluated in each semester and graded.
		Seminar	
		(10)	Each IDD programme shall contain a 2-credit seminar as a component of the Departmental / Centre's core course.
		Dissertation	
		(11)	Every student of five-year IDD (B.Tech. & M.Tech.) and Integrated M.Tech. and Integrated M.Sc. programmes shall have to work on a Dissertation in fifth year. The Dissertation topic shall be allotted to a student at the beginning of the Spring Semester of fourth year as per Academic Calendar. The Dissertation work involves in-depth study and critical review of the topic and the creation of new knowledge in the area either through development of new techniques, instruments, experimental facility and new experimental findings and/or theoretical and fundamental insight or by reinterpretation of the existing facts to propound a new theory. The procedure for the evaluation of Dissertation is given in Appendix-E6
		(12)	A student may be permitted to take up to 8 additional credits subject to a maximum of two courses in the 9 th semester along with the dissertation.
		Discipline	
		(13)	Every student shall have to undertake 2-credits of discipline in the programme for the requirements of the B.Tech., B.Arch. Degree, IDD and IMD. The student shall be continuously evaluated for discipline during his/her entire period of enrolment and will be awarded at the end of Final Year. The grades earned by the student in discipline shall be accounted for as earned.
Grade Moderation Committee	25	(1)	The DAPC/CAPC shall appoint a Grade Moderation Committee for all the Academic Courses under its purview. This committee shall be responsible for adherence to the guidelines for the award of grades and shall include all the concerned Course Coordinators. The Chairman, Grade Moderation Committee shall be responsible for the display of grades in the department and for forwarding the final grades to the Academic Section. The Chairman, Grade Moderation Committees shall also retain the record-copies of the marks and the grades along with the statistical parameters for all the courses moderated and hand over a copy of the same to the Chairman, DAPC/CAPC. The general guidelines for the moderation of grades are given in Appendix-F. One copy of distribution of marks and the question paper will be sent to the academic section along with grades by the Department.
		(2)	The Grade Moderation Committee for the common courses of first year shall consist of all the Course Coordinators of the courses offered to the first year students in a semester, with the Chairman, IAPEC as the Chairman. The Chairman, Grade Moderation Committee shall be responsible for the display of grades and for forwarding the final grades to the Academic Section. The Chairman, Grade Moderation Committee shall also retain the record copy of

			Course Coordination Committee may report the matter to the concerned DAPC (or CAPC) as the case may be. The DAPC (or CAPC) may, after considering the matter reported to it and after giving an opportunity to the concerned student(s) to explain his/her conduct, impose appropriate penalty, including the award of Grade in the concerned course(s) on the concerned student(s).
		(4)	<p>Any case pertaining to purported to resorting to unfair means / plagiarism before and after the examination / class work submission / quizzes / submission of seminar reports / Dissertation / Practicals / Laboratory classes/ Projects, etc. shall be dealt with by the appropriate committees/ persons of the concerned Department. In cases of serious nature / grave offence in the opinion of the appropriate departmental committees, viz. course coordination committees, DAPC or CAPC, the matter shall be referred to the Institute Standing Committee for dealing with the offence/ case.</p> <p>The penalty in such cases of unfair means / plagiarism which have been found to be true and</p> <ol style="list-style-type: none"> I. which have occurred before or after the examination, or partly before and during or during and after the examination; II. which have been detected after the examination/declaration of the result/award of the degree; III. which has been reported or detected after a research paper report/ note/ communication has been published in a Research Journal widely circulated magazine/ proceedings of conferences/ seminar or a monograph or a book, and or any electronic device shall be recommended by the appropriate committees of the department/institute Standing Committee, as the case may be. The imposition of any such penalty shall be at the discretion of the Director, who, after considering the full facts and the report on the matter (i) may impose the same penalty, (ii) may reduce the penalty, or (iii) may enhance the penalty as recommended by the committee.
Attendance, Absence, Leave and Withdrawals	28	(1)	All the students of UG/IDD/IMD programme are expected to be present in every lecture, tutorial, practical or drawing class scheduled for them.
		(2)	The students of UG/ IDD/ IMD must have a minimum attendance of 75% of the total number of classes including lectures, tutorials and practicals, held in a subject in order to be eligible to appear at the end term examination for that subject.
		(3)	A student should meet the above attendance requirement irrespective of the number of days, he/ she is on medical and/ or other leave for any reason whatsoever.
		(4)	Attendance of the students shall be monitored and displayed during a semester as per the guidelines approved by the Academic Board. The guidelines for monitoring the attendance of the students are given in Appendix-H.
		(5)	The names of the students who have remained absent with or without leave, for more than 25% of the actual classes held in a course as

			specified in section 28(2) will be intimated by the Course Coordinator on the last teaching day, to the Chairman, Department / Academic Committee, who will consolidate the list for all such students for all the courses of a given yearly level of a programme and display it on the notice board of the Department/ Academic Section/ Centre. The list of such students shall also be forwarded to the Dean, Academics. These students shall not be allowed to appear in the end term examination of that course and shall be awarded the grade 'F' irrespective of their performance in Class Work Sessional (CWS)/ Mid Term Examination (MTE), etc.
		(6)	If more than 50% students of a class are absent, it will be considered Mass Abstention and suitable disciplinary action will be taken against them. The guidelines for deduction of marks for Mass Abstention are given in Appendix-I.
Second Examination on Medical/ Extra Ordinary Grounds	29	(1)	A student, who fails to appear in the Mid Term Examination due to sudden illness or mishap/ accident and is supported by Medical Certificate of the Institute Medical Superintendent or in his/her absence by the Medical Officer of the Institute, may be allowed to take another examination with the permission of Dean, Academics. However, any such request for re-examination for the Mid Term Examination should be submitted by a student within one week of the completion of the Mid Term Examination.
		(2)	If a student is absent during End Term Examination of a course due to medical reasons or other special circumstances, he/ she may apply for the award of 'I' grade to the Chairman DAPC/CAPC of the concerned department/ academic centre offering the course, through the Course Coordinator and Programme Advisor, provided that he/she has attended 75% of the classes held. The Chairman DAPC/CAPC may forward this request to Dean, Academics. Second examination shall be normally held along with the re-examination of End Term Examination to convert 'I' grade to proper letter grade.
		(3)	The application for second examination on medical grounds should be supported by a Medical Certificate of the Institute Medical Superintendent or in his/her absence by the Medical Officer of the Institute. If, however, a student is outside the campus at the time of illness or a mishap/ accident, his/ her application should be supported by a Medical Certificate issued by a Medical Officer of the rank of the Deputy Chief Medical Officer or above, of the concerned District. The Institute reserves the right to accept or reject such an application and the decision of the Dean, Academics shall be final in this respect
		(4)	In such cases of re-examination (in case of MTE) or second examination (in case of ETE) on medical grounds, a student shall be awarded one grade lower than the one which she/he would have otherwise obtained as per the procedures adopted for normal grading. However, 'D' grade shall not be lowered.
		(5)	In special cases and on the specific recommendation of the Institute Medical Superintendent, a student may be permitted to appear in his/ her regular examination in the Institute Hospital.
Re-examination	30	(1)	Re-examination in any course(s) shall be permissible only in the

			semester(s) in which the course(s) is/ are run. Re-examination will be held on pre-designated dates in December/ January for the Autumn Semester courses, and in July for the Spring Semester courses.
		(2)	Re-examination will be subject to a maximum limit of two courses in a semester. In case a student fails in three or more courses, he/she will be allowed to get re-examined in any two courses, as chosen by the concerned student, and repeat the remaining courses, when they are offered in the subsequent semesters. Re-examination will not be permissible for the self study courses.
		(3)	A student will carry the marks obtained by him/her in the Mid Term Examination, Practical Examination and Sessionals.
		(4)	The highest grade that can be awarded in the re-examination shall be 'D'
		(5)	Re-examination will be allowed only if a student has not been disqualified earlier, either due to shortage of attendance or use of unfair means.
Withdrawal from Course	31a		A student who wants to withdraw from a course shall apply through the Chairman, DAPC/CAPC, to the Dean, Academics, on a prescribed form within one week from the end of the Mid Term Examination under the advice of his/her programme Advisor. If his/her request for withdrawal is granted, it will be recorded in the registration record of the student and the concerned Course Coordinator will be informed about it. The student will be awarded a withdrawal grade at the end of the semester.
Semester Withdrawal	31b		In case a student is unable to attend classes for more than four weeks in a semester he/ she may apply to the Dean, Academics through Chairman DAPC/CAPC, for withdrawal from the semester, which shall mean withdrawal from all the registered courses in the semester. However, such application shall be made under the advice of the Programme Advisor, as early as possible and latest before the start of the end term examination. Partial withdrawal from the semester shall not be allowed.
Semester Withdrawal on Medical Grounds	31c	(i)	In case the period of absence on medical grounds is more than twenty working days during the semester, a student may apply for withdrawal from the semester, if he/she so desires. But, as per provisions of section 31b application must be made to the Dean, Academics through chairman DAPC/CAPC, under the advice of the Programme advisor, as early as possible and latest before the beginning of end term examination.
		(ii)	Any application on medical grounds shall be accompanied with a medical certificate from Institute Medical Officer. A certificate from a registered medical practitioner containing the registration number may also be accepted in those cases where a student is normally residing off-campus or becomes ill while away from the Institute.
Rustication/ Suspension, Withdrawal from a Semester/ Year	30d		A student rusticated from the Institute or suspended or debarred the classes due to any reason whatsoever or having withdrawn from a semester/ year on medical grounds, shall have to meet the requirement of 75% attendance in each course in a semester and shall have to complete the programme within its maximum time

			limit of six years for Four-Year UG programmes and seven years for Five-Year UG, IDD and IMD Programmes as specified in Regulations excluding the period of expulsion, if any.
Academic Performance Monitoring	31	(1)	<p>A student shall be put on academic probation by the Dean, Academics, at the end of each semester for monitoring his/her academic progress under one or more of the following conditions:</p> <p>a) His/her SGPA becomes 5.00 or less</p> <p>b) His/her SGPA is below that of the last semester by two points or more</p> <p>c) The earned credits in a semester are less than 12.</p> <p>The credits for NCC/NSS/NSO, proficiency and discipline shall not be counted for the purpose of (c) above.</p>
		(2)	The academic progress of all such students, who are put on academic probation, shall be monitored by a committee appointed for this purpose by the Chairman, DAPC/CAPC, of the concerned department/ academic centre.
Termination of Enrolment	33	Due to Absence	
		(1)	If a student registered in the first year of the programme is continuously absent from the classes for more than four weeks without informing the Course Coordinators, the Coordinator shall immediately bring it to the notice of Chairman, IAPEC / the Head of the concerned as the case may be, for informing the Academic Section. The names of such students shall be removed from the Institute rolls and such absence during first year will render the student ineligible for re-admission.
		On Academic Grounds	
		(a)	The enrolment of a student in a programme, shall stand terminated if he/she fails to earn the minimum number of credits specified at different yearly levels in the programme as given in Appendix-'J' and fails to secure minimum CGPA of 5.00, notwithstanding the fact that the student has or has not been put under academic probation. Semester withdrawal will be excluded to determine the yearly level of a student for this purpose. This condition will also not be applicable if a student is not allowed to register for the courses of current year in accordance with 18(2). The communication regarding termination of enrolment shall be issued by the Academic Section within fifteen days from the date of declaration of results."
		(b)	The enrolment of a student may be terminated on disciplinary grounds, in accordance with the Standing Orders for the students.
		(c)	A student whose enrolment has been terminated may appeal to the Director for reconsideration within fifteen days from the date of issuance of the communication of termination and the appeal will be disposed off within fifteen days. If the appeal is allowed, his/her registration and enrolment shall be restored.
Earned Minimum Credits and Minimum CGPA	34	(1)	The credits for the courses in which a student has obtained 'D' (minimum passing grade for a course) grade or higher shall be counted as Credit earned by him/her. A student who has a minimum

for the Degree			CGPA of 5.0 and earned a minimum number of credits as specified in the UG/IDD/Integrated Masters Degree curriculum he/she is registered for, is eligible for the award of the respective degree.
		(2)	A student, who has earned the minimum credits required for a degree but fails to obtain the minimum specified CGPA for this purpose, shall take additional courses till the minimum CGPA is attained within the maximum time limit for different programmes.
Transfer of Credits from any other Institute for award of degree Scholarships, Prizes and Certificates	35	(1)	Transfer of credits earned by the students from reputed institutions known for high academic standards in India and abroad, which have an MOU with the Institute concerning this aspect, be permitted.
		(2)	The students of IIT Roorkee, who have been nominated/ recommended by the Chairman, DAPC/CAPC, and approved by Dean, Academics for pursuing study in such other institutions, will only be eligible for such transfer of credits.
		(3)	The subject wise study programme for each student and equivalence for transfer of credits based on the syllabi of the course of the host Institution to the Institute will be recommended by the Chairman, DAPC on case to case basis, and be approved by the Dean, Academics
		(4)	The credits earned in other institute will be transferred for award of degree
		(5)	The maximum permissible limit for transfer of credits will be 24.
		(6)	The subjects and grades earned will be indicated in the consolidate grade sheet/transcripts with the remark that the grades have been awarded by the host institution.
		(7)	Credits earned and grades will not be considered towards calculation of SGPA/ CGPA.
		(8)	Grades earned in host institutions will not be considered for any award/ prize at the Institute.
	36	(1)	The Institute shall award the merit-cum-means (MCM) scholarships, Institute free studentship, SC/ST category institute scholarship and other scholarships, stipends, awards and prizes to the students of UG, IDD and IMD programmes as may be approved by the Senate. Other scholarships may be instituted by grant from individuals, trusts, organizations and the Governments with a view to provide financial assistance to needy students under the terms and conditions specified by the Institute. Announcements on these scholarships, stipends, etc. stating eligibility and the value of scholarships, stipends, etc. shall be made by the Institute while inviting applications from time to time.
		(2)	A student registered for the fifth-year of the IDD programme and who has cleared all the course work requirements up to fourth year of the programme and (i) has a CGPA not less than 8.0, or (ii) has qualified GATE, may be offered MHRD scholarship/assistantship on the basis of his/her attendance in the courses registered in a semester and his/her fulfilling the requirement of weekly work hours assigned to him/her. Sixty percent (60%) of the amount of scholarship/

			assistantship shall be paid on the basis of monthly attendance of a student and the rest forty percent (40%) on the basis of weekly work hours assigned to a student. The deduction from the scholarship/ assistantship due to absence in class or non-fulfilment of the weekly work-hours assignment shall be made on pro-rata basis.
		(3)	A student may draw scholarships or stipends from outside sources only if permitted by the Dean, Academics
		(4)	Those students, who have been punished for unfair means, plagiarism during Mid Term Examination (MTE) or End Term Examination (ETE) or in Seminars/ Project/ Dissertation, etc. or for serious act of indiscipline shall not be awarded Merit-cum-Means Scholarship, Fellowship/ Assistantship/ and other trust scholarship or Medals, Prizes and awards for that academic session only. If the marks deducted from discipline in any year is 40 or more, it will be treated a serious act of indiscipline.
		(5)	The criteria for award of MCM scholarships, medals and awards are given in Appendix-K.
Leave for Assistantship Holders Under IDD Programme	37	(1)	Subject to his/her fulfilling the attendance requirements as detailed in Regulation 30 above, a student of IDD programme who is a recipient of the Institute assistantship will be entitled for 30 days leave (including leave on medical grounds) during fifth year of the programme. He/ She will not be entitled to mid semester breaks, and summer and winter vacations.
		(2)	The leave will be subject to approval of the concerned Head of the Department/ Academic Centre/Programme Coordinator.
		(3)	The Department/Academic Centre/ Programme Coordinator concerned shall maintain a proper leave account of each student.
Casual Student	38		A student registered for degree in a recognized Institute/University in India or abroad may be allowed to attend classes and laboratories as a Casual Student, if sponsored officially by the Institute/ University where he/she is studying. However, the maximum period for which a casual student will be allowed to avail the facility, shall not exceed six months. The guidelines for Casual Students are defined in Appendix-L. International students are also allowed to be admitted for short duration in a course. The guidelines for admission of such International students are given in Appendix-M.
Training of Out-side Students	39		Outside students (students from other engineering colleges) can take Summer Training at the Institute. The guidelines for training of outside students are given in Appendix-N.
Interpretation of Regulations	40		In case of any dispute, difference of opinion in interpretation of these regulations or any other matter not covered in these regulations, the decision of the Chairman, Senate shall be final and binding.
Emergent Cases	41		Not with standing anything contained in the above regulations, the Chairman of the Senate may, in emergent situations, take such action including insertion, suspension or modification of any regulation(s) on behalf of the Senate as he deems appropriate and report it to the next meeting of the Senate for its approval.

Course Structure for B.Tech.

First Year

Autumn Semester			
S.No.	Subject	Credits	Category
1.	Mathematics-I	4	BSC
2.	Introduction to (Discipline) Engineering	2	DCC
3.	Department Specific Programming course	4	ESC
4.	Department Specific Course-I	4	BSC
5.	Ethics and Self Awareness	2	HSSC
6.	Communication Skills (Basic/Advanced)	2	HSSC
7.	Introduction to Environmental Studies	3	GSC
Total		21	

Spring Semester			
S.No.	Subject	Credits	Category
1.	Mathematics-II (Module to be selected by dept.)	4	BSC
2.	Department Core Course-I	4	DCC
3.	Department Core Course-II	4	DCC
4.	Department Core Course-III	4	DCC
5.	Department Specific Course-II	4	BSC
6.	Department Specific Course-I	4	ESC
Total		24	

Second Year

Autumn Semester			
S.No.	Subject	Credits	Category
1	Department Specific Course-I	4	ESC
2	Department Core Course-IV	4	DCC
3	Department Core Course-V	4	DCC
4	Department Core Course-VI	4	DCC
5	Engineering Analysis and Design	3-4	DCC
6	Humanities and Social Sciences Elective Course*	3	HSSMEC
Total		19-23	

Spring Semester			
S.No.	Subject	Credits	Category
1	Department Specific Course-III	4	ESC
2	Department Core Course-VII	4	DCC
3	Department Core Course-VIII	4	DCC
4	Department Core Course-IX	4	DCC
5	Department Core Course-X	4	DCC
6	Humanities and Social Sciences Elective Course*	3	HSSMEC

	Total	20-23	
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*Any one course in this category is to be opted either in the Autumn or in the Spring semester in the second year. The course should be selected from the list (basket) of Humanities and Social Sciences Elective Courses.

Third Year

Autumn Semester			
S.No.	Subject	Credits	Category
1	Department Core Course-XI	4	DCC
2	Department Core Course-XII	4	DCC
3	Department Core Course-XIII	4	DCC
4	Department Elective Course-I	4	DEC
5	Technical Communication	2	DCC
6	Open Elective Course**	3	OEC
7	Management Studies Elective Course**		HSSMEC
Total		21	

Spring Semester			
S.No.	Subject	Credits	Category
1	Department Core Course-XIV	4	DCC
2	Department Core Course-XV	4	DCC
3	Department Elective Course-II	4	DEC
4	Open Elective Course**	3	OEC
	Management Studies Elective Course**		HSSMEC
5	Minor Specialisation Course-I*** / Departmental Honour Course-I****	3	MSC/DHC
6	Industry Oriented Problem/Case Study/Lab Based Project/Practical Problem	3-4	DCC
7	Educational Tour	Non-Cr.	DCC
Total		18-23	

Fourth Year

Autumn Semester			
S.No.	Subject	Credits	Category
1	Department Elective Course-III	4	DEC
2	Department Elective Course-IV	4	DEC
3	Minor Specialisation Course-II*** / Departmental Honour Course-II****	4	MSC/ DHC
4	Minor Specialisation Course-III*** / Departmental Honour Course-III****	4	MSC/ DHC
5	Training Seminar	2	DCC
Total		14/22	

Spring Semester			
S.No.	Subject	Credits	Category
1	Department Elective Course-V	4	DEC
2	Department Elective Course-VI	4	DEC
3	Minor Specialisation Course-IV*** / Departmental Honour Course-IV****	4	MSC/DHC
4	Minor Specialisation Course-V*** / Departmental Honour Course-V****	4	MSC/DHC
5.	B.Tech. Project (Contd. from Autumn Sem.)	8	DCC
Total		16/24	

*Any one course in this category is to be opted either in the Autumn or in the Spring semester in the second year. The course should be selected from the list (basket) of Humanities and Social Sciences Elective Courses.

**One course each from the OEC and the HSSMEC categories is to be opted either in the Autumn or in the Spring semester in the third

year. The HSSMEC course should be selected from the list (basket) of Management Studies Elective Course.

***The students (having CGPA>7.5) desirous of excelling in some specialisation in other than his/her parent department may take 4-5 courses from a list of such courses offered by that department during the Spring semester of 3rd year and the Spring semester of the 4th year.

****In order to obtain the Degree with Honours, the student (having CGPA>7.5) will have to complete 4-5 such courses from a list of courses offered by his/her parent department in this category.

APPENDIX – B

Table - 5: STRUCTURE FOR GRADING OF ACADEMIC PERFORMANCE

Academic Performance	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
Poor	F	0
Pass in Audit Courses	AP	-
Fail in Audit Courses	AF	-
Incomplete	I	-
Continued Project	X	-
Satisfactory	S	-
Unsatisfactory	U	-

Explanation:

'F' Grade

The 'F' grades denote poor performance, i.e. failing a course. 'F' grade is also awarded in case of poor attendance (see Attendance Rules).

For the other (elective) courses in which 'F' grade has been awarded, the student may take the same course or any other course from the same category. Further, 'F' grade secured in any course stays permanently on the grade card. The weight, of 'F' grade is not counted in the calculation of the CGPA, however, it is counted in the calculation of the SGPA.

In case a student is awarded a failing grade in the major project, he/she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum period of three months and maximum 'B' grade can be awarded to the student.

AP/AF Grades

These grades are awarded to an audit course as specified in Appendix-E4. These grades are not counted in the computation of SGPA/CGPA.

'I' Grade

This refers to an 'incomplete' grade, which is required to be converted into a regular letter grade as provided in section 29(2) of Regulations for the UG, IDD, and IMD programmes. The guidelines for the award of 'I' grade are given in Appendix-B3.

'X' Grade

This grade is awarded for incomplete Project/ Dissertation work as per guidelines given in Appendix - B4 and will be converted to a regular grade on the completion of the Project work and its evaluation.

Calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

$$\text{S.G.P.A} = \frac{\sum_{i=1}^n C_i \times P_i}{\sum_{i=1}^n C_i}$$

Where,

C_i = Number of credits of the i course of a semester for which SGPA is to be calculated

P_i = Grade point obtained in i course

$i = 1, \dots, n$, represent the number of courses in which a student is registered in the concerned semester.

$$\text{C.G.P.A} = \frac{\sum_{i=1}^m C_i \times P_i}{\sum_{i=1}^m C_i}$$

Where,

C_i = Number of credits of the i course, up to the semester for which CGPA is to be calculated

P_i = Grade point earned in i course. A grade lower than 'D' (i.e. grade point < 4) in a course shall not be taken into account.

$i = 1, \dots, m$; represent the number of courses in which a student was registered and obtained a grade not lower than 'D' upto the semester for which CGPA is to be calculated.

General Guidelines for the Award of Grades

The following are the general guidelines for the award of grades:

- (i) All evaluations of different components of a course shall be done in marks for each student.
- (ii) The marks of various components shall be reduced to approved weights as indicated in the scheme of Teaching and Examination and added to get total marks secured on a 100-points scale. The rounding off shall be done only once and on the higher side.
- (iii) The method suggested in Appendix-B1 shall be used for the award of grades with or without marginal adjustment for natural cut offs.
- (iv) In case of any difficulty the method suggested in Appendix-B2 can be used.
- (v) It is suggested that there will not be more than 10% (rounded off to near integer value) A+ grade.
- (vi) The provisional grades shall be awarded by the Coordination Committee of the course consisting of all the teachers involved in that course. The Course Coordinator shall have full responsibility for this purpose.
- (vii) The grades so awarded shall be moderated by a Grade Moderation Committee of a Department/ Academic Centre. This committee will finalize the grades and display a copy of the grades awarded on the Notice Board of the Department/ Centre. The grades should be finalized, displayed and communicated to academic section as per the academic calendar. The students shall be given 3-4 days time to apply for scrutiny of grades. The departments shall submit the modified grades, if any, to the academic section within seven days from the last date of displaying the grades on the Notice Board of the Department/Centre. No change shall be accepted after the due date, in any case. The Chairman, Grade Moderation Committee shall retain the records of all the marks and grades and shall send one copy of all records to the Chairman, DAPC.
- (viii) For a student to get passing grade, he/she will have to appear in End Term Examination.
- (ix) The procedures for evaluation and award of grades for project, training, seminar and technical communication shall be as given in the Appendix E1-E5 of Regulations for the UG, IDD, and IMD programmes.
- (x) For Dissertation, each student will be evaluated individually and the grades shall be awarded on the basis of absolute marks (Appendix B-2). The Dissertation shall be presented before an Examination Board for evaluation, as per procedure given in Appendix -E6.

Statistical Method for the Award of Grades

For the award of grades in a course, all component-wise evaluation shall be done in marks. The marks of different components viz., Mid Term Examination (MTE), End Term Examination (ETE), Course Work Sessionals (CWS), and Practical Sessionals (PRS) would be reduced to relative weights of each component as approved by the Senate and added. Marks so obtained shall be out of 100 and the same would be converted to grades following the guidelines given below:

The statistical method shall invariably be used, with marginal adjustment for natural cut-off. The mean (\bar{X}) and the standard deviation of marks obtained of all the students in a course shall be calculated and used to convert the marks into normal variate (Z). The normalized marks (Z) shall be arranged in decreasing order to work out ranges for different letter grades.

$$Z = \frac{X - \bar{X}}{\sigma},$$

where X = Actual marks obtained;

\bar{X} = Mean of marks and

σ = Standard deviation.

The grade boundaries are left to the discretion of grade moderation committee. However, each course coordinator, in consultation with the Grade Moderation Committee, may decide a suitable set of boundaries for a particular course for the award of grades. One possible set of boundaries for Z variate is mentioned in the Table-6 below:

Table-6: Possible Set of Boundaries for Z Variate

Lower Range of Z	Grade	Upper Range of Z
> 1.5	A+	-
> 1.0	A	≤ 1.5
> 0.5	B+	≤ 1.0
> 0.0	B	≤ 0.5
> -0.5	C+	≤ 0.0
> -1.0	C	≤ -0.5
> -1.5	D	≤ -1.0
-	F	≤ -1.5

Awards of Grades Based on Absolute Marks System

The award of grades based on absolute marks out of 100 shall be made as given in Table-7 below:

Table-7: Marks Boundaries for Grades in Absolute Marks System

Marks	Grade	Marks
91 ≤	A+	≤ 100
82 ≤	A	≤ 90
73 ≤	B+	≤ 81
64 ≤	B	≤ 72
55 ≤	C+	≤ 63
46 ≤	C	≤ 54
35 ≤	D	≤ 45
-	F	≤ 34

Award of 'I' Grade

- a) If a student is absent during End Term Examination of a course due to medical reasons or other special circumstances, he/she may apply for the award of 'I' grade to the Chairman, DAPC through the Course Coordinator and the Program Coordinator, provided that he/she has attended 75% of the classes held. The concerned Course Coordinator shall have to be convinced about the extraordinary circumstances and shall have to certify the attendance record before this rarely used option to award 'I' grade is recommended. The Chairman DAPC may award 'I' grade.
- b) The 'I' grade so awarded shall be notified by the Department/Centre to which the student belongs and a copy of the notification will be endorsed to the Academic Section and to the concerned Course Coordinator (e.g., the notification for 'I' grade of a Chemical Engineering student will be, notified by the Department of Chemical Engineering on the recommendation of the concerned Course Coordinator, even if the course pertains to another Department/Academic Centre).
- c) The 'I' grade shall be converted into a proper letter grade as per the provisions in Regulation 29(2) after second examination is over and the requirements of the course are completed by the student and shall be sent to the Academic Section.
- d) In extraordinary circumstances, the period of conversion of 'I' grade may be extended to the next semester, with the approval of the Dean, Academics on his own or on the recommendation of the Course Coordinator and the Head of the Department /Centre to which the student belongs.
- e) In extra-ordinary circumstances, on the recommendation of the Dean, Academics, the Director may order the award of 'I' grade to a student/class or a batch of students taking a particular course. The conversion of 'I' grade into a regular grade or any other action shall be as per the directive of the Director.

Award of 'X' Grade

A student who is unable to complete his/her Project/Dissertation before the last date of submission may be awarded an 'X' grade on the recommendation of an Evaluation Committee. 'X' grade will be awarded to a student only under exceptional circumstances beyond student's/ supervisor's control. Normally, the following grounds may be considered for the award of 'X' grade:

- a) Medical grounds to the satisfaction of the Institute Medical Officer and the approval of the Dean, Academics.
- b) Technical reasons/grounds such as Supervisor/equipment not being available.

If the department awards 'X' grade to a student, proper justification must be sent along with the grades.

If 'X' grade is awarded to student, the student is required to formally register for the next semester and pay the requisite fees. The student has to complete the work and present the work before the evaluation committee (departmental members only). The result will be declared whenever the result is received from the department during that semester.

GUIDELINES FOR CHECKING PLAGIARISM

a) Exclusion of material while checking

- (i) All quoted material.
- (ii) Matches up to 20 words.
- (iii) All material (e.g., figures/ images and tables) used with the permission of the original source.
- (iv) Material published by students from the thesis/ dissertation.
- (v) Bibliography.

b) Acceptance Levels

- (i) Introduction and Literature review portion: commonality up to 20% may be accepted. However, paraphrasing should be encouraged.
- (ii) Remaining material (e.g., Methodology, Results, Discussion, Conclusion and future research): commonality up to 10% may be accepted.
- (iii) Overall similarity index should normally be between 15% and 20%.

APPENDIX – E1

Procedure for Evaluation of Practical/Field Training

- a) Every student will submit a written report to the Department/Centre on the work carried out during the training period along with a certificate from the organization where training was done.
- b) A time slot of 2 hour/week/batch will be assigned in the student time table and the students will be asked to present their work in the form of a seminar of about 30-minute duration, before a committee appointed by the DFC/CFC and other students of that batch.
- c) The performance of the students will be evaluated by the committee in marks on the basis of (i) the training report, (ii) presentation, (iii) viva-voce.
- d) Although normal attendance will not apply to this course component, 10-20% marks will be awarded on the basis of attendance in seminars to encourage participation of the entire class.
- e) The grades will be computed on the basis of the established procedure as for other courses.
- f) The grade moderation committee for the course will be the same as that for the other courses of the class.
- g) If a student is awarded a failing grade in this course, he shall have to repeat the course by undergoing 6-10 week training either at the Institute or at an organization outside the Institute during the summer vacation following the eighth semester.

APPENDIX – E2

Procedure for Conduct and Evaluation of Technical Communication

- a) The entire class will be divided into batches of 30-40 students each and a two-member committee will be appointed for each batch by the DFC/CFC. One of the members of the committee(s) will be appointed as the Course Coordinator.
- b) A time slot of 2 hours/week/batch will be allotted for this course in the time table.
- c) All the students are required to select one technical topic of their interest. They have to do the literature survey and prepare a technical report on the selected topic. They have to prepare a power point presentation and give a seminar on the topic.

- d) The performance of each student will be judged based upon (i) content, (ii) report (iii) fluency of presentation, and (iv) performance in viva-voce.
- e) The committee will award marks to various students for each component.
- g) Though normal attendance regulations will not apply, 10-20% marks will be awarded on the basis of attendance to encourage participation by the students.
- h) The grades will be computed in accordance with the established procedure.
- i) If a student is awarded a failing grade, he shall have to repeat the course when it is offered by the Department /Centre the next time.

APPENDIX – E3

Guidelines for Allocation and Evaluation of Self Study Course

- a) A student cannot claim to take a course as a self study course as a matter of right.
- b) The course can only be offered to a student in his/ her final semester when he/she is likely to fall short by a maximum of 6 earned credits to become eligible for the award of degree.
- c) Only a course from the list of regular courses of study for the programme, which the student has not cleared and which is not being offered in that semester as a regular course, can be given as a self study course.
- d) The duration of the course will be a full semester.
- e) The student will apply to Dean, Academics through his programme advisor and the concerned Chairman, DAPC well before the date of registration. The course will be offered only if Dean, Academics approves it.
- f) If the course is approved by Dean, Academics, the Head of the concerned department will appoint a course coordinator in consultation with Chairman, DAPC. A teaching load of 1 hour/week will be counted in the time-table of the coordinator.
- g) No formal lectures will be held in the course but laboratory, design, and tutorial exercises will be conducted if they form an integral part of the course. The course coordinator will assign tutorial problems / laboratory exercises to the student and monitor his/her progress weekly.
- h) The mid-term and end term examinations for the course will be scheduled by the department like in other courses and the course coordinator will be responsible for the conduct of these examinations.
- i) For the award of marks, various components, e.g., lecture, tutorial, and practical, will be given the same weight as specified in the curricular structure.
- j) The final grade will be awarded on the basis of Absolute Grading System and will not exceed 'B' in any case.
- k) The grade moderation committee for the course will be the same as for other courses of the class.
- l) Normal attendance regulations will not apply to this course.
- m) A fee of Rs.1500/- per credit shall be charged from a student who registers for a self study course in summer term.

APPENDIX – E4

Guidelines for the Grant and Award of Additional Course

- a) A student can register a maximum of 8 credits as additional courses, over and above the minimum earned credits specified for a programme, from amongst the courses of any UG/IDD/IMD academic curriculum of the Institute. These courses can be either credit or audit in nature. It will not be counted towards minimum earned credits for a given programme. Such a request will be granted from the fifth semester onwards, provided that (i) the student has a CGPA >7.0 and (ii) the total number of registered credits, including the audit registration, are within the credit limits prescribed in clause 18(7) of UG

regulation. On the recommendation of Course Coordinator, the Chairman, DAPC/CAPC may grant the approval and inform the Assistant Registrar (Academic Studies) who will record it in the registration record of the student.

- b) The evaluation of a student, who has registered for the additional course(s), will be carried out in the same way as for other students registered in the course and his/her grade will be computed along with other students in the class. However, if he/she has registered this additional course as audit, his/her grade will be recorded in the grade sheet as an 'AP' (Audit Pass) grade if he/she obtains a 'D' or higher grade and 'AF' (Audit Fail) if he/she obtained 'F' grade.
- c) Normal attendance regulations, as prescribed by the Institute from time to time, will apply to audit courses. If the attendance of a student, who has registered for audit course is less than the prescribed limit, he/she will not be eligible to appear in the end term examination and will be awarded an 'AF' grade.

APPENDIX – E5

Procedure for Conduct and Evaluation of B.Tech. Project

- a) This course will be offered in the final year of the B. Tech. / B.Arch. programme and its total duration will be two semesters.
- b) Head of the Department shall appoint an O.C. Project on the advice of DFC/CFC from amongst the members of the DAPC/CAPC, who will act as the course coordinator.
- c) The project can be carried out by the students either individually or in a group. However, the number of students in a group will not exceed four.
- d) The O.C. Project will invite proposals from the faculty members and students and finalize the project problems allotted to various groups by August 31, in the 7th semester.
- e) An L-T-P loading of 0-0-4 and 0-0-8 will be shown in the time table of students in the seventh and eighth semesters, respectively, and the students would be required to work on their projects during these periods. However, no teacher will be assigned for these periods and the progress of students will be monitored by their respective supervisors.
- f) The evaluation will be based upon mid-term examinations and a final examination. A weight of 40% will be assigned to mid-term examination and 60% to final examination.
- g) Mid Term Examination will be held in each of the 7th and 8th semesters. The mid-term examination will involve report submission, presentation and oral viva-voce. For this purpose, suitable committees will be appointed by the Head of the Department/ Centre in consultation with O.C. Project. The various examination committees will award marks to individual students and forward them to the O.C. Project, who will maintain a record.
- h) The final project examination will be carried out at in the 7th (for 4 credits) and 8th (for 8 credits) semester, within 10 days from the last theory paper. For this purpose, suitable examination committees will be appointed by the Head of the Department/Centre, in consultation with O.C. Project, with at least one external examiner. In case an examiner from outside the Institute is not available, a faculty member of the Institute from outside the Department/Centre may be appointed as an external examiner after taking his/her consents.
- i) The students will be required to submit a final project report to O.C. Project, at least 3 days before the date of final project examination.
- j) The final examination may be in the form of demonstration in the laboratory and viva-voce or only viva-voce, depending upon the nature of the project.
- k) The examination committee will award marks to individual students and forward them to O.C. Project, who will compute grades in accordance with the prescribed procedures.
- l) The Grade Moderation Committee for the course will be the same as that for other courses of the class.
- m) In case a student is awarded a failing grade in the major project, he/she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum

period of 4 months.

- n) In special circumstances, a student may be awarded 'X' grade, the conditions for which are given in Appendix-B4.
- o) Normal attendance regulations will not apply to this course.

APPENDIX - E6

Procedure for the Evaluation of M.Tech. Dissertation for IDD Students

- a) The topics and the supervisors for the IDD students is to be finalized in 4th year spring semester by January 15.
- b) The dissertation credits are kept 30 and evaluated in both the semesters of 5th year.
- c) In 5th year I semester 40% of dissertation be evaluated for 12 credits and evaluation work is be completed by November 15. The dissertation report for first stage is to be submitted by October 30.
- d) In 5th year II semester remaining 60% dissertation be evaluated for 18 credits. The students are required to submit the work by the first week of May and the evaluation work is to be completed by the 3rd week of May.
- e) The evaluation of dissertation will be done by an examination board consisting of all the members of the concerned academic area/group. The external examiner may be invited, if available. In case such academic groups do not exist in the department, a board of 3 to 4 members belonging to the broad academic area may be constituted, including the supervisor for each student. This examination board will carry out mid-term and final evaluation of each student. Chairman of these boards should be common for at least 5 students so that uniformity in evaluation is possible.
- f) It is expected that the student will also write a research paper from dissertation and communicate the same for publication/ presentation. In some cases, it may be possible to get the review report on the research paper. A certificate to this effect will be submitted by the student while submitting the final copy of dissertation.

APPENDIX – F

GUIDELINES FOR MODERATION OF GRADES

- a) The date of moderation should be made a part of Academic Calendar.
- b) Two-tier moderation be done, both for the subject and for the Semester (SGPA, CGPA). Minor adjustment should be possible during moderation, particularly in the marginal cases. Chairman, DAPC/CAPC should invariably retain a copy of the grades sent to Academic Section so that CGPAs may be calculated without having to make a reference to the Academic Section for this purpose.
- c) All concerned faculty members should invariably be present for the moderation committee meeting. In case anybody is going out on Institute duty, he / she will hand over his / her inputs for moderation with a colleague, who should present it, in the meeting.

APPENDIX – G

INSTRUCTION FOR PENALTY FOR USE OF UNFAIR MEANS

1. The main instructions for the conduct of a student in the examination hall shall be printed on the cover page of the answer book. Any contravention of these instructions and the use any unfair means will render the student liable for punishment.
2. As soon as student is suspected by the invigilator having resorted to unfair means, his/her answer-book shall be seized. The paper etc. duly signed by the invigilator found in possession of the student shall be attached with answer-book in his/her presence. The student shall then be asked to complete part II of the prescribed form and sign it. This form shall than be endorsed by the Invigilator.

3. After completing all the above formalities, a fresh answer- book shall be given to the student for completing the examination.
4. After a particular examination is over, these answer-books (duly marked I, II) shall or delivered separately to the Assistant Registrar (Academic) together with the report form duly completed in all respects.
5. A committee appointed by the Director shall enquire into cases of attempt at unfair means in the examination. It shall submit its recommendation after laying down clearly the nature of the offence listed below to the Director for consideration and necessary orders.
6. A student whose guilt is established shall be dealt with under the provisions of the disciplinary regulations.
7. The action as given in Table may be taken for different categories of offense under these regulations:

PENALTY FOR USE OF UNFAIR MEANS

Sl. No.	Nature of Offence	Action to be Taken
A-1	(a) A student found talking to another student during the examination hours. (b) If during the examination hours i.e. after receipt of the question paper and before handling over the answer- book a student is found to be talking to a person outside the examination-hall while going to the urinal etc.	First warning to the student and change the seat if possible. If student does not follow the instructions then take the answer-book and sent him out from the examination hall.
A-2	(a) Possession of cell phone or any other item of such type of communication in examination hall but not in use.	Take the cell phone or any other item of such type of communication, make a note in the invigilator diary and return these after the examination.
A-3	(a) Taken away the answer book from the examination hall either by mistake or deliberately	Examination of the concerned paper be cancelled and 'F' grade be awarded.
B	If during the examination hours i.e. after receipt of the question paper and before handling- over answer- book a student is found (a) In possession of any written/ printed materials or notes written on any part of the body/clothing or instruments such as set square, electronic gadgets etc. (b) To be copying or to have copied from any paper, book or notes written on any part of his/her clothing or body or instruments like calculators, scales etc. (c) To be consulting notes or books while being outside the examination hall during examination hours. (d) Passing on a copy of question(s) set in paper or solution thereof to anyone. (e) To have received help from or given help to another candidate through some written material/electronic device pertaining to the questions set in the paper concerned. (f) To be guilty of swallowing or destroying any note or paper found with him/her. (g) Found in possession a solution of a question set in the paper through the help of any student, supervisory or ministerial staff or some other agency. (h) Found guilty of having made previous arrangement to obtain help in connection with the question paper in cases not covered by the above provision.	All the examination for that semester to be cancelled and the student be debarred from appearing at all Institute examination during the next semester.
C	(a) Found guilty of writing deliberately another students' roll number in his/her answer-book or found in possession of an answer- book not his/her own on impersonating another	The default action is expulsion from the Institute. However, these cases will be looked after carefully

	candidate in any examination.	by the committee on unfair-means.
D	(a) Any person who is not a candidate for any examination found committing or abetting in committal of any of the offence mentioned above. (b) Guilty of serious misconduct in the examination hall or non-compliance with the instructions of the superintendent or any of the invigilators in the examinations hall. (c) Cases not covered by these regulations.	To be dealt with by the committee on unfair-means in an appropriate manner.

FORM FOR REPORTING CASES OF USE OF OR ATTEMPT TO USE UNFAIR MEANS AT THE INSTITUTE EXAMINATIONS

Note: One sheet should be used for one candidate only. If printed forms run short, the form should be photocopied and used.

- (1) Name of Examination.....
- (2) Candidate's Enrolment No.....
- (3) Name of Candidate..... (with full postal address)
.....
- (4) Room No Bhawan.....
- (5) Subject in which the candidate is reported to have used or intended to use unfair means
- (6) Day.....Date.....Time.....

I. Particulars of books, papers, electronic gadgets, etc. found in possession of the student and submitted along with the scripts and this report (All these materials should be signed by the Invigilator of examination and the candidate).

- (1) Name of book (if any) (a)
(b)
(c)
- (2) Number of leaves of books
- (3) Number of (a) manuscript slips:..... (b) sheets:

Any other articles such as electronic gadget, etc.

- (a)
- (b)
- (c)

II. Statement of the candidate to be obtained at once in his/her own handwriting.

- (1) Were the above articles recovered from your possession ?
- (2) Why did you keep them with you inspite of clear instructions ?
- (3) Did you make any use of them ?
- (4) Have you any thing else to state ?

Date..... Time.....

(Signature of Candidate)

Certified that this statement was made in my presence.

Certified that the candidate declined to give any statement. (Certificate not applicable should be crossed by the invigilator)

Date.....

Time.....

(Signature of Invigilator)

(N.B. The report of the invigilator should be definite and unambiguous).

GUIDE LINES FOR ATTENDANCE RECORDS AND PREPARATION OF LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN THE END TERM EXAMINATION

Step	Action	Performa to be filled	Target Dates
First	Communication from Chairman, DAPC/CAPC to Course Coordinator requesting to submit the list of students having short attendance on specified format up to prescribed date.	ATT. 1/7	One week before the last date of display as per academic calendar
Second	Consolidation of the list of such students by Chairman, DAPC/CAPC and Notice from chairman, DAPC/CAPC for Short Attendance	ATT. 2/7	
Third	Communication from AR (Acd) to parent/ guardian of student having short attendance.	ATT. 3/7	
Fourth	Communication from Chairman, DAPC/CAPC to Course Coordinator requesting to submit the final list of students having short attendance on specified format up to prescribed date.	ATT. 4/7	
Fifth	Preparation on list of detained students by DAPC/CAPC and recommendation to this effect.	ATT. 5/7	
Sixth	Notices from Chairman, DAPC/CAPC to Students Notice Board.	ATT. 6/7	
Seventh	Action by AR (Acd) to ascertain that the detained students do not appear in examination.	ATT. 7/7	

ATT. 1/7

From Chairman, DAPC /CAPC to Course Coordinators

DEPARTMENT OF.....

LIST OF STUDENTS HAVING SHORT ATTENDANCE (<75%)

Academic Year.....

Class.....

Semester..... Autumn/Spring

Course Title.....

Course Code.....

All Course Coordinators

Please inform the names of UG Students having less than 75% attendance (L+T+P) up to (as per academic calendar) in the course of which you are the Coordinator in Autumn /Spring SemesterThe Information may please be sent to undersigned **latest by**in the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

S.No.	Student Enrolment Number	Name of Student	Branch	Attendance Record (L+T+P)		
				Classes Held	Classes Attended	Percentage Attendance

Name of the Course Coordinator.....

Signature

From Chairman, DAPC /CAPC to Notice Boards

DEPARTMENT OF.....

NOTICE

LIST OF STUDENTS HAVING SHORT ATTENDANCE (<75%)

Academic Year..... Class..... Semester..... Autumn/Spring

As per attendance regulations in force, a student is required to have attended at least 75% of the total classes held in a subject, in order to be eligible to appear in the end-term examination of that subject. Up to (as per academic calendar), the following students are having short-attendance in the courses indicated against their names. These students are advised to be extra careful and make up for the short attendance; otherwise they may be debarred from appearing in the end term examination.

S.No.	Student Enrolment No.	Name of Student	Branch	Course		Percentage Attendance
				Code	Title	

(Chairman, DAPC / CAPC)

Copy to:

1. Head of the Department/Centre
2. Asstt. Registrar (Acad) to inform student's parent / guardian
3. Students Notice Boards
4. All Bhawan & Mess Notice Boards
5. Respective Programme Advisors with the request to call the students and counsel them.

ATT. 3/7

NOTICE

UNDER CERTIFICATE OF POSTING

From Assistant Registrar (Academic) to student's parent / guardian

LIST OF STUDENTS HAVING SHORT ATTENDANCE (<75%)

No:EX/

Dated

Dear Guardian / Parent,

Your ward is studying B.Arch./B.Tech. (..... Year) degree course at this Institute.

I have to inform you that as per regulations of the Institute governing the attendance of the students, a student is required to have at least 75% attendance in a course in a semester to be eligible to appear in the End Term Examination of that course . But your ward is not attending the classes regularly and his/her attendance has fallen below the required level in following course (s).

S.No.	Course		Sl.No.	Course	
	Code	Title		Code	Title
1			4		
2			5		
3			6		

This is for your kind information. You may also kindly advise your ward to be regular in attending the classes and bring his/her attendance to the required level failing which he/she will not be allowed to appear in the examinations.

Yours truly,
Assistant Registrar(AS)

DEPARTMENT OF.....

LIST OF STUDENTS HAVING SHORT ATTENDANCE (< 75%)

Academic Year.....

Class.....

Semester..... Autumn/Spring

Course Title.....

Course code.....

All Course Coordinators

Please inform the names of UG Students having less than 75% attendance (L+T+P) up to (as per academic calendar).....in the course of which you are the Coordinator in Autumn/Spring Semester.....The information may please be sent to undersigned **latest by**.....in the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

(Chairman, DAPC/CAPC)

S.No.	Student Enroll No.	Name of Student	Branch	Attendance Record (L+T+P)		
				Classes Held	Classes Attended	Percentage Attendance

Name of the Course Coordinator.....

Signature
ATT. 5/7

From Chairman, DAPC/CAPC

DEPARTMENT OF.....

LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN END TERM EXAMINATION AS PER REGULATION

Academic Year.....

Class.....

Semester.....

Autumn/Spring

Course Title.....

Course Code.....

Sl.No.	Enrolment No.	Name of student	Percentage attendance

1. (a) Dates on which the names of the students were placed on the Notice Boards of the Department.....
- (b) If the names of the students were not placed on the Notice Boards, specify the reasons for the same.
2. As per the information given by all teachers of this subject, there are no other cases of shortage of attendance in this subject.
3. The students as listed above are detained from appearing in the examination in the subject noted above as per the attendance record given above.

Signatures of Chairman, DAPC / CAPC members and Chairman

Members.....

(CHAIRMAN)

Copy to: 1. Head of the Department

DEPARTMENT OF.....
NOTICE

LIST OF STUDENTS HAVING SHORT ATTENDANCE (< 75%)

Academic Year..... Class..... Semester.....Autumn/Spring

On the recommendation of department/centre academic committee meeting held on.....following students are hereby detained from appearing in the end term examination in subjects listed against their names.

S.No.	Student Enroll No.	Name of Student	Branch	Course		Percentage Attendance
				Title	Code	

Date:

(Chairman, DAPC/CAPC)

Copy to:

1. Head of the Department/Cente
2. Assistant Registrar(Academic)
3. Students Notice Boards
4. All Bhawan & Mess Notice Boards
5. Respective Programme Advisors with the request to call the students and counsel them.

ATT. 7/7

List of students having Short of Attendance (<75%)

Academic Year.....

Class.....

Semester.....

Autumn/Spring

As per attendance regulations.....and recommendation made by competent authority, following students are not found eligible to appear in End Term Examination of Autumn/Spring Semester in the courses mentioned before their name. Invigilators are requested not to allow these students to appear in the concerned examinations.

S.No.	Student Enroll No.	Name of Student	Branch	Course		Percentage Attendance
				Title	Code	

Date.....

Asst. Registrar (Academic Studies)

GUIDELINES FOR DEDUCTION OF MARKS FOR MASS ABSTENTION FROM CLASSES

A fine of 5 marks for undergraduate students out of the discipline group, will be imposed on each of the student by the Head of the Department on the recommendation of Course Coordinators and Chairman DAPC/CAPC, for mass abstention from a class. The maximum fine for a day would be limited to 15 marks. For B.Tech./ IDD/ Integrated Masters Degree I year students, such fine shall be imposed by the First year Class Coordinators. All such fines shall be communicated to Dean of Students' Welfare for record. The marks so fined will not be converted into monetary fine.

If the disciplinary marks are exhausted for a student, additional fine of marks would be converted to monetary fine. For the purpose of calculating equivalent monetary fine from marks or vice-versa, one mark shall be treated as Rs. 50/- or the amount approved by the Director from time to time on the recommendation of Dean of Students' Welfare.

APPENDIX – J

MINIMUM REQUIREMENT OF EARNED CREDITS AND CGPA FOR CONTINUATION OF REGISTRATION

S. No.	Year	B. Tech. Programs			Integrated Programs#			B. Arch.
			With Minor Specialization	With Honours	Dual Degree (IDD)	M. Tech. (IMT)	M. Sc. (IMS)	
1.	I Yr*	22	22	22	22	22	22	22
2.	II Yr	46	46	46	46	46	46	46
3.	III Yr	72	72	72	72	72	72	72
4.	IV Yr	100	106	106	100	100	100	100
5.	V Yr	130	142	142	130	130	130	130
6.	VI Yr	160-170**	178-190**	178-190**	162	162	162	162
7.	VII Yr	-	-	-	192-200**	192-200**	192-200**	226**

* Excluding NCC/NSO/NSS Discipline credits,

** The figure should not be less than the minimum prescribed for the program including Co-curricular Activities (CCA).

Without Honours and Minor specialization

NOTE: These Credits include credits earned through Re-examination.

NOTE: In addition to requirement of earned credits each student has to secure at least 5.00 CGPA for continuation of study.

APPENDIX – K

SCHOLARSHIPS, PRIZES, MEDALS, AWARDS

A. INSTITUTE MERIT-CUM-MEANS (MCM) SCHOLARSHIPS

The institute offers merit-cum-means scholarships to undergraduate students in engineering and technology. These are permissible to about 25% of students. The present value of merit-cum-means scholarship is Rs.1000/-per month for general category students and the, recipient is exempted from paying

tuition fee.

The 4-year B.Tech., 5-year Dual-Degree and 5-year Integrated M.Tech. students will be eligible to receive Merit-cum-Means scholarship at the time of joining the Institute. The criterion of merit for first year is All India Rank in the JEE. The scholarships are renewed on a yearly basis until he/she clears all academic requirements of the programme, provided that he/she continues to satisfy the eligibility criteria (given below).

Continuation of MCM scholarship for general category students of the 4-year B.Tech., 5-year Dual-degree and 5-year Integrated M.Tech. programmes, the requirements of merit for continuation of Institute Merit-cum-Means Scholarship are: .

- (i) CGPA must be 6.0 or more; and,
- (ii) Earned credits should not be less than 22 times the number of semesters registered for; and
- (iii) SGPA in the previous semester must be 6.0 or more
- (iv) Should not be penalised due to unfair means/discipline

For continuation of MCM, performance of the students will be reviewed at the end of each semester. The first such review will be held at the end of the second semester.

On the criterion of means, only those students are presently eligible whose parents have gross yearly income up to Rs. 4.5 lacs per annum for all categories of students including SC/ST students. The terms and conditions of the award of scholarship are laid down in the rules and regulations thereof in force and are subject to change from time to time.

Note: The income range is subject to revision as per directives of Government of India.

B. MEDALS & AWARDS

The following medals/prizes will be awarded to students for their academic/overall excellence.

B.1 PRESIDENT's Gold Medal

To be awarded to the student with good character who entered through JEE and obtains the highest marks/CGPA among all students obtaining a B.Tech. degree in that year from the 4/5-year B.Tech./B.Arch., 5-year Integrated M.Sc., 5-year Integrated M.Tech. and 5-year Dual-Degree programmes. For the purpose of this award, the marks/ CGPA for the 4-year programme students will be computed without including the Major Project grades, while those for the dual-degree students will be based on the UG credits. In case there is a tie, the medal will be awarded to the student with the largest earned credits.

B.2 DIRECTOR's Gold Medal

To be awarded to a student with good character who entered through JEE and who is adjudged as the best all-rounder from amongst the graduating students of the 4/5year B.Tech./B.Arch., 5-year Integrated M.Sc., 5-year Integrated M.Tech. and 5-year Dual-Degree programmes.

B.3 INSTITUTE Gold Medal

To be awarded to a student securing a CGPA of 1 0, other than the one who has been awarded the President's Gold Medal.

B.4 INSTITUTE Silver Medals (One for each UG/Dual-degree Int. M.Sc./Int. M.Tech. programmes)

To be awarded to a student (one in each programme) who obtains the highest marks/CGPA amongst the graduating class of undergraduate students of the Institute, in his/her programme. A separate (additional) Institute Silver Medal, will be awarded for each Dual-Degree programme to a student who obtains the highest marks/CGPA amongst the graduating students of that programme. For the purpose of this award, the marks/CGPA will be calculated on the basis of the cumulative performance in both B.Tech./ B.Arch. and M.Tech. credits. In case there is a tie, the medal is awarded to the student with the largest earned credits. No Silver Medal will be awarded in the discipline from which a student gets the President's Gold Medal or Institute Gold Medal. A minimum marks/CGPA of 8.5 or its equivalent is required for award of the Institute Silver Medal; in case no graduating student satisfies this criterion, the student with the highest marks/CGPA will be given a certificate.

APPENDIX - L

GUIDELINES FOR CASUAL STUDENTS

The students from other Institutions can be admitted as Casual students for both UG and PG courses as per following guidelines:

- (a) The entry of such students be made more stringent by evolving appropriate selection criterion through DAPC/CAPC so that IIT brand is not misused or diluted.
- (b) The registration of the students be approved by the Dean, Academic Studies.
- (c) Casual students should only be admitted for course work. Thesis or project work be excluded for casual students, with the exception of these students who join under some MOUs with provisions enabling it.
- (d) The casual students should not be admitted in the Institute for Summer Training.
- (e) A maximum of 10% of the total regular students in B.Tech./IDD/Integrated Masters programme and 20% in M.Tech. can be admitted as casual students in a course.
- (f) The quality of casual students be checked by the concerned department.
- (g) Full fee for the semester be charged irrespective of number of courses taken.

APPENDIX – M

GUIDELINES FOR ADMISSION OF INTERNATIONAL STUDENTS FOR SHORT DURATION

International students be allowed to join the Institute for a short term duration for course work / training / project in all Undergraduate /Postgraduate programmes of the Institute, subject to following conditions:

- (a) The duration of course / training / project will not be more than one year,
- (b) The bench fee will be as follows:
 - i) US\$ 50 per credit with a minimum of US\$ 500 (Five Hundred) per semester for students from SAARC countries;
 - ii) US\$ 100 per credits with a minimum of US\$ 1000 (One Thousand) per semester for students from other countries;
- (c) The fee charged will cover the hostel rent also. The students will have to pay mess charges as being charged from other hostel inmates;
- (d) In each semester, the maximum number of students allowed to join a Department / Centre will be 02 (two);
- (e) The applications of the candidates, duly forwarded by their parent Institution, will be received by the

department / centre of the candidate's specialization which will forward the suitable applications to Dean, Academics for final approval. International projects and the exchange covered under MoUs, is beyond these provisions.

- (f) Foreign students will be admitted as per the MHRD guidelines issued from time to time.

APPENDIX – N

GUIDELINES FOR TRAINING OF OUTSIDE STUDENTS

- (a) Students from any Engineering College/Institute may be accepted for summer internship provided the Supervisor and the concerned HOD agree to provide the training and facilities in the Department.
- (b) A faculty can take only one candidate for the summer internship provided faculty is available in station during the summer vacation.
- (c) The students from other IITs will be over and above.
- (d) A bench fee of Rs. 5000/- P.M. per student be charged by the Institute from the students/ sponsoring Institute(s).
- (e) The sponsoring institution will not advertise in any of their publications that the practical training will be arranged at IIT Roorkee.
- (f) The training certificate will be given by the faculty supervisor only, after satisfactory completion of the training.
- (g) The selection of candidates for summer internship will be done centrally to ensure good candidates come for summer internship.
- (h) The children of Institute employees studying in other Institutes can be admitted for practical training as per following guidelines:
 - i) 100% bench waiver to the children of Group 'D' employees.
 - ii) 50% bench fee waiver to the children of Group 'B' & 'C' employees.
 - iii) The fee waivers be confined to the UG students studying in Government Engineering Colleges only.
 - iv) Applications be routed to the Dean, Academics, through the Head of the concerned Department, along with all the relevant documents.
 - v) These trainees will be over and above the strength of trainees, which the Institute can accept in a year.

B.ARCH., B.TECH., I.D.D. and 5-Year Integrated Masters PROGRAMMES

BACHELORS DEGREE

1. **B.Arch.**
2. **B.Tech. (Biotechnology)**
3. **B.Tech. (Chemical Engineering)**
4. **B.Tech. (Civil Engineering)**
5. **B.Tech. (Computer Science and Engineering)**
6. **B.Tech. (Electrical Engineering)**
7. **B.Tech. (Electronics and Communication Engineering)**
8. **B.Tech. (Mechanical Engineering)**
9. **B.Tech. (Metallurgical and Materials Engineering)**
10. **B.Tech. (Production and Industrial Engineering)**
11. **B.Tech. (Polymer Science and Technology)**

INTEGRATED DUAL DEGREE

1. **B.Tech. (Process Engineering) and M.B.A.**

INTEGRATED MASTER OF SCIENCE

1. **M.Sc. (Applied Mathematics)**
2. **M.Sc. (Physics)**

INTEGRATED MASTER OF TECHNOLOGY

1. **M.Tech. (Geophysical Technology)**
2. **M.Tech. (Geological Technology)**

Department-wise Teaching Scheme Department of Architecture and Planning

BACHELOR OF ARCHITECTURE

First Year (Autumn Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics I	BSC	4	3	1	-	3	-	25	-	25	50	-
2	AR-101	Introduction to Architecture	DCC	2	1	-	2	-	-	-	-	-	100	-
3	AR-103	Visual Art I	DCC	2	1	-	3	-	3	-	60	20	-	20
4	AR-105	Architectural Graphics I	DCC	4	1	-	6	-	3	-	60	20	-	20
5	AR-107	Basic Design and Creative Workshop I	DCC	4	1	-	6	-	4	-	60	20	-	20
6	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	-	2	2	-	25	-	25	50	-
	HS-001B	Communication Skills (Advance)	HSSMEC	2	1	-	2	2	-	25	-	25	50	-
7	CE-001	Introduction to Environmental Studies	GSC	3	3	-	-	3	-	25	-	25	50	-
8	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	-	2	-	25	-	25	50	-

First Year (Spring Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-102	Architectural Design I	DCC	4	1	-	6	-	7	-	60	20	-	20
2	AR-104	Introduction to Building Materials and Construction-I	DCC	3	1	-	4	4	-	-	40	20	40	-
3	AR-106	Architectural Graphics II	DCC	4	1	-	6	-	3	-	40	20	-	40
4	AR-108	Climatology in Architecture	DCC	3	2	1	-	2	-	25	-	25	50	-
5	AR-110	Visual Art & Creative Workshop II	DCC	4	1	1	4	1	2	15	40	15	15	15
6	AR-112	Computer Systems and Programming	ESC	4	3	-	2	3	-	15	25	20	40	-
7	CE-192	Geomatics Techniques for Architects	ESC	3	2	-	2	2	-	15	25	20	40	-

Second Year (Autumn Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-201	Architectural Design II	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-203	Building Construction II	DCC	4	1	1	4	4	-	-	40	20	40	-
3	AR-205	History of Architecture-I	DCC	3	2	1	-	2	-	25	-	25	50	-
4	AR-207	Quantity, Pricing and Specifications	DCC	3	2	1	-	2	-	25	-	25	50	-
5	AR-209	Structure and Architecture	DCC	3	2	1	-	2	-	25	-	25	50	-
6	AR-211	Principles of Architecture	DCC	3	2	1	-	2	-	25	-	25	50	-
7	AR-213	Measured Drawing Camp	DCC	2	-	-	2	-	-	-	100	-	-	-

Second Year (Spring Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-202	Architectural Design-III	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-204	Building Construction-III	DCC	4	1	1	4	4	-	-	40	20	40	-
3	AR-206	History of Architecture -II	DCC	3	2	1	-	2	-	25	-	25	50	-
4	AR-208	Building Codes and Regulations	DCC	2	1	1	-	2	-	25	-	25	50	-
5	AR-210	Modern World Architecture	DCC	3	2	1	-	3	-	25	-	25	50	-
6	AR-212	Landscape Design and Site Development	DCC	3	2	-	2	3	-	15	25	20	40	-
7	CE-292	Theory of Structures	ESC	4	3	1	-	3	-	25	-	25	50	-

Third Year (Autumn Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-301	Architectural Design-IV	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-303	Building Construction-IV	DCC	4	1	1	4	4	-	-	40	20	40	-
3	AR-305	Computer Applications in Architecture	DCC	2	1	-	3	-	4	-	60	20	-	20
4	AR-ELE I	Departmental Elective - I	DEC	3	-	-	-	-	-	-	-	-	-	-
5	CE-391	Design of Reinforced Concrete Elements	ESC	4	3	1	2/2	3	-	20	20	20	40	-
6	HS-351	Society, Culture and Built Environment	HSSME C	3	2	1	-	2	-	25	-	25	50	-

Third Year (Spring Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-302	Architectural Design-V	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-ELE II	Departmental Elective II	DEC	3	-	-	-	-	-	-	-	-	-	-
3	AR-310	Building Technology-Mechanical and Electrical	ESC	4	3	1	-	3	-	25	-	25	50	-
4	CE-392	Design of Steel Elements	ESC	3	2	1	-	2	-	25	-	25	50	-
5	CE-394	Building Services	ESC	2	1	-	2	2	-	25	-	25	50	-
6	HS-352	Building Economics	HSSME C	3	2	1	-	2	-	25	-	25	50	-

Fourth Year (Autumn Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-401	Architectural Design-VI	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-403	Urban Design	DCC	4	3	-	2	3	-	15	25	20	40	-
3	AR-405	Sustainable Architecture	DCC	4	3	1	-	3	-	25	-	25	50	-
4	AR-407	Working Drawing	DCC	2	-	-	4	-	2	-	60	20	-	20
5	AR-ELE III	Department Elective-III	DEC	3	-	-	-	-	-	-	-	-	-	-
6	AR-415	Live Project/ Studio/ Seminar-I	DCC	2	-	-	4	-	-	-	100	-	-	-

Fourth Year (Spring Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-402	Professional Training	DCC	10	-	-	-	-	-	-	-	-	-	-

Fifth Year (Autumn Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-501	Architectural Design-VII	DCC	5	1	-	8	-	7	-	60	20	-	20
2	AR-503	Thesis Project I	DCC	3	-	3	-	-	-	100	-	-	-	-
3	AR-505	Urban Planning	DCC	4	3	-	2	3	-	15	25	20	40	-
4	AR-507	Hill Architecture	DCC	3	2	1	-	2	-	25	-	25	50	-
5	AR-ELE IV	Departmental Elective-IV	DEC	3	-	-	-	-	-	-	-	-	-	-
6	AR- 515	Live Project/Studio/Seminar-II	DCC	2	-	-	4	-	-	-	100	-	-	-

Fifth Year (Spring Semester)

S.No	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AR-502	Professional Practice, Valuation and Arbitration	DCC	4	3	1	-	3	-	25	-	25	50	-
2	AR-504	Thesis Project-II	DCC	15	0	0	20	-	-	-	50	-	-	50
3	AR-ELE V	Departmental Elective-V	DEC	3	-	-	-	-	-	-	-	-	-	-

Department of Biotechnology
BACHELOR OF TECHNOLOGY (BIOTECHNOLOGY)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2.	PH-107	Modern Physics	BSC	4	3	0	2	3	0	15	25	20	40	-
3.	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4.	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
4.	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5.	HS-002	Ethics and Self Awareness	HSSMEC	2	2	1	0	2	0	25	-	25	50	-
6.	BT-101	Introduction to Biotechnology	DCC	2	2	0	0	2	0	-	-	-	100	-
7.	BT-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	MA-002	Mathematical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
2.	BT-102	Process Calculations	DCC	4	3	1	0	3	0	25	-	25	50	-
3.	BT-104	Cell Biology	DCC	4	3	1	0	3	0	25	-	25	50	-
4.	BT-106	Biochemistry	DCC	4	3	1	0	3	0	25	-	25	50	-
5.	CY-002	Organic and Inorganic Chemistry	BSC	4	3	0	2	3	2	15	25	20	40	-
6.	MI-102	Basic Manufacturing Processes	ESC	4	2	0	4	3	0	15	25	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	MI-106	Engineering Thermodynamics	ESC	4	3	1	2/2	3	0	20	20	20	40	-
2.	BT-201	Genetics and Molecular Biology	DCC	4	3	1	0	3	0	25	-	25	50	-
3.	BT-203	Microbiology	DCC	4	3	1	0	3	0	25	-	25	50	-
4.	BT-205	Bioinformatics	DCC	4	3	1	0	3	0	25	-	25	50	-
5.	BT-207	Immunotechnology	DCC	4	3	1	0	3	0	25	-	25	50	-
6.	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	CE-142	Fluid Mechanics	ESC	4	3	1	2/2	3	0	20	20	20	40	-
2.	BT-202	Genetic Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
3.	BT-204	Structural Biology	DCC	4	3	1	0	3	0	25	-	25	50	-
4.	BT-206	Heat and Mass Transfer Operations	DCC	4	3	1	0	3	0	25	-	25	50	-
5.	BT-208	Biotechnology Laboratory - I	DCC	4	0	0	8	0	0	-	-	100	-	-
6.	BT-292	Chemical Kinetics and Reactor Design	DCC	3	2	1	0	2	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	BT-301	Bioprocess Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
2.	BT-303	Plant Biotechnology	DCC	4	3	1	0	3	0	25	-	25	50	-
3.	BT-305	Animal Biotechnology	DCC	4	3	1	0	3	0	25	-	25	50	-
4.	BT-ELE1	Department Elective Course - I	DEC	4	3	1	0	3	0	25	-	25	50	-
6	OEC/BM-ELE	Management Studies / Open Elective Course *	HSSMEC/OEC	3	3	0	0	3	0	25	-	25	50	-
6.	BT-391	Technical Communication	DCC	2	0	2	0	0	0	-	-	-	100	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	BT-300	Industry Oriental Problem /Case Study Lab Based Project/Practical Problem	DCC	4	3	1	0	3	0	25	-	25	50	-
2.	BT-302	Bioseparation Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
3.	BT-304	Biotechnology Laboratory - II	DCC	4	0	0	8	0	0	-	100	-	-	-
4.	BT-ELE2	Department Elective Course - II	DEC	4	3	1	0	3	0	25	-	25	50	-
5.	MSC1/DHC1	Minor Specialization Course-I/Departmental Honours Course-I	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6.	OEC/BM-ELE	Management Studies / Open Elective Course *	HSSMEC/OEC	3	3	0	0	3	0	25	-	25	50	-
7.	BT-399	Educational Tour	DCC	0	0	0	0	0	0	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	BT- 400A	B.Tech. Project	DCC	4	0	0	8	0	0	-	-	-	-	-
2.	BT- ELE3	Department Elective Course -III	DEC	4	3	1	0	3	0	25	-	25	50	-
3.	BT- ELE4	Department Elective Course -IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4.	MSC2/DHC2	Minor Specialization Course-II/Departmental Honours Course-II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5.	MSC3/DHC3	Minor Specialization Course-III/Departmental Honours Course-III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6.	BT- 499	Training Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1.	BT- 400B	B.Tech. Project (Contd. from Autumn Semester)	DCC	8	0	0	16	0	0	-	100	-	-	-
2.	BT- ELE5	Department Elective Course -V	DEC	4	3	1	0	3	0	25	-	25	50	-
3.	BT- ELE6	Department Elective Course -VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC4/DHC4	Minor Specialization Course-IV /Departmental Honours Course-IV	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/DHC5	Minor Specialization Course-V/Departmental Honours Course-V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-

Department of Civil Engineering
BACHELOR OF TECHNOLOGY (CIVIL)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	2	1	0	2	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	CE-101	Introduction to Civil Engineering	DCC	2	2	0	0	0	0	-	-	-	100	-
7	CE-103	Numerical Methods and Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-008	General Chemistry - III	BSC	4	3	0	2	3	0	15	25	20	40	-
2	MA-006	Probability and Statistics	BSC	4	3	1	0	3	0	25	-	25	50	-
3	CE-102	Solid Mechanics	ESC	4	3	1	0	3	0	25	-	25	50	-
4	CE-104	Water Supply Engineering	DCC	4	3	1	-	3	0	20	20	20	40	-
5	CE-106	Geomatics Engineering – I	DCC	4	3	0	2	3	0	15	25	20	40	-
6	CE-108	Fluid Mechanics	DCC	4	3	1	-	3	0	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Sciences	ESC	4	3	1	-	3	0	20	20	20	40	-
2	CE-203	Geomatics Engineering – II	DCC	5	3	0	2	3	0	15	25	20	40	-
3	CE-205	Channel Hydraulics	DCC	4	3	1	-	3	0	20	20	20	40	-
4	CE-207	Structural Analysis – I	DCC	4	3	1	-	3	2	20	20	20	40	-
5	CE-291	Engineering Graphics	DCC	4	2	2	0	3	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	2	1	0	3	0	50	-	-	50

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-102	Basic Manufacturing Processes	ESC	4	2	0	4	3	0	15	25	20	40	-
2	CE-202	Waste Water Engineering	DCC	4	3	1	-	3	0	20	20	20	40	-
3	CE-204	Engineering Hydrology	DCC	4	3	1	-	3	0	20	20	20	40	-
4	CE-206	Structural Analysis-II	DCC	4	3	1	-	3	0	20	20	20	40	-
5	CE-208	Design of Reinforced Concrete Elements	DCC	4	3	1	-	3	2	20	20	20	40	-
6	CE-210	Highway and Traffic Engineering	DCC	4	3	1	-	3	0	20	20	20	40	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-303	Soil Mechanics	DCC	4	3	1	-	3	0	20	20	20	40	-
2	CE-305	Design of Steel Elements	DCC	4	3	0	2	3	0	15	25	20	40	-
3	CE-307	Railway Engineering and Airport Planning	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CE-ELE1	Department Elective Course – I	DEC	4	-	-	-	-	-	-	-	-	-	-
5	OEC/ BM-ELE	Open Elective Course/ Management Studies Elective Course	OEC/ HSSMEC	3	-	-	-	-	-	-	-	-	-	-
6	CE-391	Technical Communication	DCC	2	0	2	0	0	0	100	-	-	-	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-300	Industry Oriented Problem/ Case Study/Lab based Project/ Practical Problem	DCC	3	-	-	-	-	-	-	-	-	-	-
2	CE-306	Foundation Engineering	DCC	4	3	1	-	3	0	20	20	20	40	-
3	CE-308	Design of Structural Systems	DCC	5	4	1	-	3	0	20	20	20	40	-
4	CE-ELE2	Department Elective Course – II	DEC	4	-	-	-	-	-	-	-	-	-	-
5	MSC1/ DHC1	Minor Specialization Course-I / Department Honours Course – I	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
6	OEC/ BM-ELE	Open Elective Course/ Management Studies Elective Course	OEC/ HSSMEC	3	-	-	-	-	-	-	-	-	-	-
7	CE-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-400A	B. Tech. Project	DCC	4	-	-	-	-	-	-	-	-	-	-
2	CE-ELE3	Department Elective Course-III	DEC	4	-	-	-	-	-	-	-	-	-	-
3	CE-ELE4	Department Elective Course-IV	DEC	4	-	-	-	-	-	-	-	-	-	-
4	MSC2/ DHC2	Minor Specialization Course-II / Department Honours Course – II	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
5	MSC3/ DHC3	Minor Specialization Course-III / Department Honours Course – III	MSC/ DHC	4	-	-	-	-	-	-	-	-	-	-
6	CE-499	Training Seminar	DCC	2	-	-	-	-	-	-	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-400B	B. Tech. Project (Contd. From Autumn Semester)	DCC	8	-	-	-	-	-	-	-	-	-	-
2	CE-ELE5	Department Elective Course-V	DEC	4	-	-	-	-	-	-	-	-	-	-
3	CE-ELE6	Department Elective Course-VI	DEC	4	-	-	-	-	-	-	-	-	-	-
4	MSC4/ DHC4	Minor Specialization Course-IV / Department Honours Course – IV	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
5	MSC5/ DHC5	Minor Specialization Course-V / Department Honours Course – V	MSC/ DHC	4	-	-	-	-	-	-	-	-	-	-

Department of Chemical Engineering
BACHELOR OF TECHNOLOGY (CHEMICAL)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	CY-001	Physical Chemistry	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
5	HS-002	Ethics and Self-awareness	HSSMEC	2	1	1	0	2	0	15	-	35	50	-
6	CH-101	Introduction to Chemical Engineering	DCC	2	2	0	0	0	0	-	-	-	100	-
7	CH-103	Computer Programming and Numerical Methods	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-002	Organic and Inorganic Chemistry	BSC	4	3	1	2/2	3	0	20	20	20	40	-
2	MA-002	Mathematical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
3	CH-102	Material and Energy Balance	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CH-104	Fluid Dynamics	DCC	4	3	1	2/2	3	2	20	20	20	40	-
5	CH-106	Thermodynamics and Chemical Kinetics	DCC	4	3	1	0	3	0	25	-	25	50	-
6	EE-112	Electrical Science	ESC	4	3	1	2/2	3	0	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-201	Heat Transfer	DCC	4	3	1	2/2	3	3	20	20	20	40	-
2	CH-203	Mechanical Operations	DCC	4	3	1	2/2	3	2	20	20	20	40	-
3	CH-205	Chemical Engineering Thermodynamics	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CH-207	Transport Phenomena	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MI-108	Mechanical Engineering Drawing	ESC	4	2	0	4	0	4	-	25	25	-	50
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-202	Mass Transfer -I	DCC	3	2	1	2/2	2	3	20	20	20	40	-
2	CH-204	Reaction Engineering	DCC	5	3	1	4/2	3	4	20	20	20	40	-
3	CH-206	Chemical Technology	DCC	3	3	0	0	3	0	25	-	25	50	-
4	CH-210	Industrial Instrumentation	DCC	2	2	0	0	2	0	25	-	25	50	-
5	CH-112	Energy Engineering	ESC	4	3	1	0	3	0	25	-	25	50	-
6	CH-291	Equipment Design*	DCC	4	3	0	2	4	0	15	25	20	40	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-301	Mass Transfer-II	DCC	5	3	1	3/2	3	3	20	20	20	40	-
2	CH-303	Process Dynamics and Control	DCC	4	3	1	2/2	3	3	20	20	20	40	-
3	CH-305	Process Equipment Design*	DCC	4	3	0	2	4	0	15	25	20	40	-
4	CH-ELE1	Departmental Elective Course-1	DEC	4	3	1	0	3	0	25	-	25	50	-
5	OEC	Open Elective Course	OEC	3	3	0	0	3	0	25	-	25	50	-
6	CH-391	Technical Communication	DCC	2	0	2	0	0	0	-	100	-	-	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-300	Industry Oriented Problem/CaseStudy/Lab Based Project/Practical Problem	DCC	3	0	0	3	0	0	-	50	-	-	50
2	CH-302	Engineering Analysis and Process Modeling	DCC	4	3	1	0	3	0	25	-	25	50	-
3	CH-304	Process Economics and Plant Design	DCC	3	3	0	0	3	0	25	-	25	50	-
4	CH-306	Process Utilities and Safety	DCC	3	3	0	0	3	0	25	-	25	50	-
5	CH-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
6	MSC1/DHC1	Minor Specialization Course-I/Departmental Honours Course-I	MSC/D HC	4	3	1	0	3	0	25	-	25	50	-
7	BM-ELE	Any one Elective course from 'Management Studies'	HSSM EC	3	3	0	0	3	0	25	-	25	50	-
8	CH-399	Educational Tour	DCC	0	0	0	0	0	0	-	50	-	-	50
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-400A	B. Tech. Project	DCC	4	0	0	4	0	0	-	50	-	-	50
2	CH-ELE3	Department Elective Course- III	DEC	4	3	1	0	3	0	25	-	25	50	-
3	CH-ELE4	Department Elective Course- IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC2/DHC2	Minor Specialization Course-II/Departmental Honours Course-II	MSC/D HC	4	3	1	0	3	0	25	-	25	50	-
5	MSC3/DHC3	Minor Specialization Course-III/Departmental Honours Course-III	MSC/D HC	4	3	1	0	3	0	25	-	25	50	-
6	CH-499	Training Seminar	DCC	2	0	2	0	0	0	50	-	-	50	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CH-400B	B. Tech. Project (Contd. From Autumn Semester)	DCC	8	0	0	8	0	10	-	-	-	100	-
2	CH-ELE5	Department Elective Course- V	DEC	4	3	1	0	3	0	25	-	25	50	-
3	CH-ELE6	Department Elective Course- VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC4/DHC4	Minor Specialization Course-IV/Departmental Honours Course-IV	MSC/D HC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/DHC5	Minor Specialization Course-V/Departmental Honours Course-V	MSC/D HC	4	3	1	0	3	0	25	-	25	50	-

Department of Computer Science and Engineering
BACHELOR OF TECHNOLOGY (COMPUTER SCIENCE)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-005	Electrodynamics and Optics	BSC	4	3	0	2	3	2	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	35	50	-
4	HS-101B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-101A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	2	0	0	2	0	25	-	25	50	-
6	CS-101	Introduction to Computer Science and Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	CS-103	Fundamentals of Object Oriented Programming	ESC	4	3	0	-	3	0	20	20	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-010	Optimization Techniques	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-006	Quantum Mechanics and Statistical Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	EC-104	Digital Logic Design	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CS-102	Data Structures	DCC	4	3	1	0	3	0	25	-	25	50	-
5	CS-106	Discrete Structures	DCC	4	3	1	0	3	0	25	-	25	50	-
6	EC-102	Fundamentals of Electronics	ESC	4	3	1	0	3	0	25	-	25	50	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-106	Engineering Thermodynamics	ESC	4	3	1	0	3	0	25	-	25	50	-
2	EC-203	Signals and Systems	DCC	4	3	1	0	3	0	25	-	25	50	-
3	CS-221	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CS-261	Data Structures Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50
5	CS-291	Object Oriented Analysis and Design	DCC	4	3	0	2	3	0	15	25	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-105	Electrical and Electronic Materials	ESC	4	3	1	0	3	0	25	-	25	50	-
2	CS-212	Design and Analysis of Algorithms	DCC	4	3	1	0	3	0	25	-	25	50	-
3	CS-252	System Software	DCC	3	2	1	0	2	0	25	-	25	50	-
4	CS-254	Software Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
5	CS-232	Operating Systems	DCC	4	3	1	0	3	0	25	-	25	50	-
6	EC-252	Digital Electronic Circuits Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50
7	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CS-341	Computer Networks	DCC	4	3	1	0	3	0	25	-	25	50	-
2	CS-351	Data Base Management Systems	DCC	4	3	1	0	3	0	25	-	25	50	-
3	CS-353	Theory of Computation	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CS-361	Computer Networks Laboratory	DCC	2	0	0	3	0	0	-	100	-	-	-
5	CS-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
6	OEC/ BM-ELE	Open Elective Course/Management Studies Elective Course	OEC/HSS MEC	3	3	0	0	3	0	25	-	25	50	-
7	CS-391	Technical Communication	DCC	2	0	2	0	0	0	-	-	-	100	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CS-300	Industry-oriented Problem / Lab-based Project / Software Engineering-based Project	DCC	4	0	0	6	0	0	-	100	-	-	-
2	CS-312	Principles of Programming Languages	DCC	3	3	0	0	3	0	25	-	25	50	-
3	CS-352	Compiler Design	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CS-362	Compiler Laboratory	DCC	2	0	0	3	0	0	-	100	-	-	-
5	CS-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
6	OEC/ BM-ELE	Open Elective Course/Management Studies Elective Course	OEC/HSS MEC	3	3	0	0	3	0	25	-	25	50	-
7	MSC1/ DHC1	Minor Specialization Course-I / Departmental Honours Course-I	MSC / DHC	4	3	1	0	3	0	25	-	25	50	-
8	CS-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CS-ELE3	Departmental Elective Course-III	DEC	4	3	1	0	3	0	25	-	25	50	-
2	CS-ELE4	Departmental Elective Course-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
3	CS-499	Training Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-
4	CS-400A	B.Tech. Project	DCC	4	0	0	3	0	0	-	-	-	-	-
5	MSC2/ DHC2	Minor Specialization Course-II / Departmental Honours Course-II (optional)	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	MSC3/ DHC3	Minor Specialization Course-III / Departmental Honours Course-III (optional)	MSC / DHC	4	3	1	0	3	0	25	-	25	50	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CS-ELE5	Departmental Elective Course-V	DEC	4	3	1	0	3	0	25	-	25	50	-
2	CS-ELE6	Departmental Elective Course-VI	DEC	4	3	1	0	3	0	25	-	25	50	-
3	CS-400B	B.Tech. Project (Contd. from Autumn Semester)	DCC	8	0	0	12	0	0	100	-	-	-	-
4	MSC4/ DHC4	Minor Specialization Course-IV / Departmental Honours Course-IV (optional)	MSC / DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/ DHC5	Minor Specialization Course-V / Departmental Honours Course-V (optional)	MSC / DHC	4	3	1	0	3	0	25	-	25	50	-

Department of Electronics and Communication Engineering
BACHELOR OF TECHNOLOGY (ELECTRONICS & COMMUNICATION)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-005	Electrodynamics and Optics	BSC	4	3	1	0	3	0	25	-	25	50	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	EC-101	Introduction to Electronics and Communication Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	CS-103	Fundamentals of Object Oriented Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-002	Mathematical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-006	Quantum Mechanics and Statistical Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CS-102	Data Structures	DCC	4	3	1	0	3	0	25	-	25	50	-
4	EC-104	Digital Logic Design	DCC	4	3	1	0	3	0	25	-	25	50	-
5	EC-142	Semiconductor Devices	DCC	4	3	1	41 67 2	3	0	20	20	20	40	-
6	EE-112	Electrical Science	ESC	4	3	1	41 67 2	3	0	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ME-108	Mechanical Engineering Drawing	ESC	4	2	0	4	0	4	-	50	-	-	50
2	EC-203	Signals and Systems	DCC	4	3	1	0	3	0	25	-	25	50	-
3	EC-205	Analog Circuits	DCC	4	3	1	0	3	0	25	-	25	50	-
4	CS-221	Computer Architecture and Microprocessors	DCC	4	3	1	0	3	0	25	-	25	50	-
5	EC-291	Electronic Network Theory (Engineering Analysis and Design course)	DCC	4	3	1	0	3	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-105	Electrical and Electronic Materials	ESC	4	3	1	0	3	0	25	-	25	50	-
2	MA-006	Probability and Statistics	BSC	4	3	1	0	3	0	25	-	25	50	-
3	EC-212	Principles of Digital Communication	DCC	4	3	1	0	3	0	25	-	25	50	-
4	EC-222	Automatic Control Systems	DCC	4	3	0	3	3	0	20	20	20	40	-
5	EC-232	Engineering Electromagnetics	DCC	4	3	1	0	3	0	25	-	25	50	-
6	EC-252	Digital Electronic Circuits Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-311	Communication Systems and Techniques	DCC	4	3	1	0	3	0	25	-	25	50	-
2	EC-331	Antenna Theory	DCC	3	3	0	0	3	0	25	-	25	50	-
3	EC-333	Microwave Engineering	DCC	3	3	0	0	3	0	25	-	25	50	-
4	EC-341	Microelectronic Devices, Technology and Circuits	DCC	2	1	0	2	0	2	15	35	-	-	50
5	EC-351	IC Application Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50
6	EC-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
7	BM-ELE	Management Studies Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-
8	EC-391	Technical Communication	DCC	2	0	2	0	0	0	-	-	-	100	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-300	Industry-oriented Problem / Case study / Lab-based Project / Practical Problem	DCC	3	0	0	6	0	0	-	100	-	-	-
2	EC-312	Digital Signal Processing	DCC	3	3	0	0	3	0	25	-	25	50	-
3	EC-342	RF and Mixed Signals Circuits	DCC	3	3	0	0	3	0	25	-	25	50	-
4	EC-352	Communication Systems Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50
5	EC-354	Microwave Laboratory	DCC	2	0	0	3	0	3	-	50	-	-	50
6	EC-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
7	OEC	Open Elective Course	OEC	3	3	0	0	3	0	25	-	25	50	-
8	MSC1/DHC1	Minor Specialization Course-I/Departmental Honours Course-I	MSC/DHC	3	3	0	0	3	0	25	-	25	50	-
9	EC-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-ELE3	Departmental Elective Course-III	DEC	3	3	0	0	3	0	25	-	25	50	-
2	EC-ELE4	Departmental Elective Course-IV	DEC	3	3	0	0	3	0	25	-	25	50	-
3	MSC2/DHC2	Minor Specialization Course-II/Departmental Honours Course-II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
4	MSC3/DHC3	Minor Specialization Course-III/Departmental Honours Course-III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	EC-499	Training Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-
6	EC-400A	B.Tech. Project	DCC	4	0	0	3	-	-	-	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-ELE5	Departmental Elective Course-V	DEC	3	3	0	0	3	0	25	-	35	50	-
2	EC-ELE6	Departmental Elective Course-VI	DEC	3	3	0	0	3	0	25	-	35	50	-
3	MSC4/DHC4	Minor Specialization Course-IV/Departmental Honours Course-IV	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
4	MSC5/DHC5	Minor Specialization on Course-V/Departmental Honours Course-V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	EC-400B	B.Tech. Project(contd. From Autumn semester)	DCC	8	0	0	12	0	0	-	100	-	-	-

Department of Electrical Engineering
BACHELOR OF TECHNOLOGY (ELECTRICAL)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-003	Electromagnetic Field Theory	BSC	4	3	1	0	3	0	25	-	25	50	-
3	CE-105	Introduction to Environmental Science	GSC	3	2	1	0	2	0	25	-	25	50	-
4	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	-	25	25	50	-
	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
5	HS-002	Ethics and Self-Awareness	HSSMEC	2	2	0	0	2	0	15	-	35	50	-
6	EE-101	Introduction to Electrical Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	EE-103	Programming in C++	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-002	Mathematics-II	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-004	Modern Physics	BSC	4	3	1	-	3	2	20	20	20	40	-
3	MI-106	Engineering Thermodynamics	ESC	4	3	1	0	3	0	25	-	25	50	-
4	EE-102	Network Theory	DCC	4	3	1	0	3	0	25	-	25	50	-
5	EE-104	Electrical Measurement and Measuring Instruments	DCC	4	3	0	2	3	2	15	25	20	40	-
6	EE-106	Analog Electronics	DCC	4	3	1	-	2	2	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-201	Electrical Machines-I	DCC	5	3	1	2	3	3	15	25	20	40	-
2	EE-203	Digital Electronics and Circuits	DCC	4	3	1	-	3	2	20	20	20	40	-
3	EE-205	Design of Electronic Circuits	DCC	4	3	1	-	3	0	20	20	20	40	-
4	EE-211	Control Systems	ESC	4	3	1	0	3	0	25	-	25	50	-
5	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	2	0	-	25	25	50	-
6	EE-291	Engineering Analysis and Design	DCC	3	2	0	2	2	0	15	25	20	40	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-105	Electrical and Electronic Materials	ESC	4	3	1	0	3	0	25	-	25	50	-
2	EE-202	Electrical Machines-II	DCC	5	3	1	2	3	3	15	25	20	40	-
3	EE-204	Microprocessors and Peripheral Devices	DCC	5	3	1	2	3	2	15	25	20	40	-
4	EE-206	Power Transmission and Distribution	DCC	4	3	1	0	3	0	25	-	25	50	-
5	EE-208	Applied Instrumentation	DCC	4	3	1	-	3	0	20	20	20	40	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-301	Power System Analysis & Control	DCC	4	3	1	-	3	0	20	20	20	40	-
2	EE-303	Power Electronics	DCC	4	3	1	-	3	2	20	20	20	40	-
3	EE-305	Advanced Control Systems	DCC	5	3	1	2	3	3	15	25	20	40	-
4	EE-ELE1	Departmental Elective Course-I	DEC	4	-	-	-	-	-	-	-	-	-	-
5	OEC	Open Elective Course	OEC	3	2	1	0	2	0	25	-	25	50	-
6	EE-391	Technical Communication	DCC	2	0	0	4	0	0	-	-	-	100	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-300	Industry Oriented Problem	DCC	3	-	-	-	-	-	-	-	-	-	100
2	EE-302	Electric Drives	DCC	4	3	1	-	3	0	20	20	20	40	-
3	EE-304	Protection & Switchgear	DCC	4	3	0	2	3	2	15	25	20	40	-
4	EE-310	General Viva	DCC	2	-	-	-	-	-	-	-	-	100	-
5	EE-ELE2	Departmental Elective Course-II	DEC	4	-	-	-	-	-	-	-	-	-	-
6	BM-ELE	Management Studies Elective Course	HSSMEC	3	2	1	0	2	0	25	-	25	50	-
7	MSC1/ DHC1	Minor Specialization Course – I/Departmental Honour Course – I	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
8	EE-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-400A	B.Tech. Project	DCC	4	-	-	-	-	-	-	-	-	-	100
2	EE-ELE3	Departmental Elective Course-III	DEC	4	-	-	-	-	-	-	-	-	-	-
3	EE-ELE4	Departmental Elective Course-IV	DEC	4	-	-	-	-	-	-	-	-	-	-
4	MSC2/ DHC2	Minor Specialization Course – II/Departmental Honour Course – II	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
5	MSC3/ DHC3	Minor Specialization Course – III/Departmental Honour Course – III	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
6	EE-499	Training Seminar	DCC	2	-	-	-	-	-	-	-	-	100	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-400B	B.Tech. Project (Contd. From Autumn Sem.)	DCC	8	-	-	-	-	-	-	-	-	-	100
2	EE-ELE5	Departmental Elective Course-V	DEC	4	-	-	-	-	-	-	-	-	-	-
3	EE-ELE6	Departmental Elective Course-VI	DEC	4	-	-	-	-	-	-	-	-	-	-
4	MSC4/ DHC4	Minor Specialization Course-IV/Departmental Honour Course – IV	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-
5	MSC5/ DHC5	Minor Specialization Course-V/Departmental Honour Course – V	MSC/DHC	4	-	-	-	-	-	-	-	-	-	-

Department of Earth Sciences
INTEGRATED M.TECH (GEOPHYSICAL TECHNOLOGY)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	2	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	ES-101	Introduction to Earth Sciences	DCC	2	2	0	0	2	0	-	-	-	100	-
7	ES-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-006	Probability and Statistics	BSC	4	3	0	2	3	0	15	25	20	40	-
2	PH-008	Electromagnetic Theory	BSC	4	3	1	0	3	0	25	-	25	50	-
3	ES-102	Physical Geology	DCC	4	3	1	0	3	0	25	-	25	50	-
4	ES-104	Crystallography and Mineralogy	DCC	4	3	0	2	3	2	15	25	20	40	-
5	HY-102	Engineering Hydrology	ESC	4	3	1	-	3	0	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	-	3	0	20	20	20	40	-
2	ES-201	Basic Petrology	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-205	Structural Geology-I	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-221	Field Theory	DCC	4	3	1	0	3	0	25	-	25	50	-
5	ES-223	Geophysical Prospecting	DCC	3	2	1	0	2	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	2	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-102	Fundamentals of Electronics	ESC	4	3	1	0	3	0	25	-	25	50	-
2	ES-202	Sedimentology	DCC	4	3	1	0	3	0	25	-	25	50	-
3	ES-222	Geology of India	DCC	4	3	1	0	3	0	25	-	25	50	-
4	ES-224	Geophysical Signal Processing	DCC	4	3	1	0	3	0	25	-	25	50	-
5	ES-226	Field Training-I (Geology)	DCC	4	-	-	-	-	-	-	-	-	100	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-305	Economic Geology	DCC	4	3	0	2	3	0	15	25	20	40	-
2	ES-321	Gravity and Magnetic Prospecting	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-323	Electrical Prospecting	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-325	Seismology	DCC	4	3	0	2	3	0	15	25	20	40	-
5	OEC	Open Elective Course	OEC	3	3	0	0	3	-	25	-	25	50	-
6	ES-391	Technical Communication (Advanced)	DCC	2	0	0	4	-	2	-	50	-	-	50
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-300	Field Training-II (Integrated Gravity, Magnetic, Electrical & Seismic)	DCC	4	0	0	0	-	-	-	-	-	100	-
2	ES-322	Electromagnetic Prospecting	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-324	Seismic Prospecting	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
5	ES-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-421	Numerical Modelling in Geophysics	DCC	4	3	1	0	3	0	25	-	25	50	-
2	ES-423	Geophysical Well Logging	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-ELE3	Departmental Elective Course-III	DEC	4	3	1	0	3	0	25	-	25	50	-
4	ES-ELE4	Departmental Elective Course-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
5	ES-499	Seminar-I	DCC	2	0	0	0	0	0	0	0	0	100	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-406	Plate Tectonics	DCC	3	2	1	0	2	0	25	-	25	50	-
2	ES-422	Geophysical Inversion	DCC	4	3	1	0	3	0	25	-	25	50	-
3	ES-424	Petroleum Geosciences	DCC	4	3	1	0	3	0	25	-	25	50	-
4	ES-ELE5	Departmental Elective Course-V	DEC	4	3	1	0	3	0	25	-	25	50	-
5	ES-ELE6	Departmental Elective Course-VI	DEC	4	3	1	0	3	0	25	-	25	50	-
Fifth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-529	Comprehensive Viva Voce	DCC	2	0	0	0	-	-	-	-	-	100	-
2	ES-ELE7	Department Elective Course-VII	DEC	4	3	1	0	3	0	25	-	25	50	-
3	ES-ELE8	Department Elective Course-VIII	DEC	4	3	1	0	3	0	25	-	25	50	-
4	ES-599	Seminar-II	DCC	2	0	0	0	-	-	-	-	-	100	-
Fifth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-500	Dissertation	DCC	18	0	0	0	-	-	-	-	-	100	-

Department of Earth Sciences
INTEGRATED M.TECH (GEOLOGICAL TECHNOLOGY)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	2	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	ES-101	Introduction to Earth Sciences	DCC	2	2	0	0	2	0	-	-	-	100	-
7	ES-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-008	General Chemistry-III	BSC	4	3	0	2	3	0	15	25	20	40	-
2	MA-004	Numerical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
3	ES-102	Physical Geology	DCC	4	3	1	0	3	0	25	-	25	50	-
4	ES-104	Crystallography and Mineralogy	DCC	4	3	0	2	3	2	15	25	20	40	-
5	MI-106	Engineering Thermodynamics	ESC	4	3	1	2/2	3	0	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-106	Material Science	ESC	4	3	1	0	3	0	25	-	25	50	-
2	ES-201	Basic Petrology	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-203	Paleontology	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-205	Structural Geology-I	DCC	4	3	0	2	3	0	15	25	20	40	-
5	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	HY-102	Engineering Hydrology	ESC	4	3	1	0	3	0	25	-	25	50	-
2	ES-202	Sedimentology	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-204	Stratigraphy	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-206	Igneous Petrology	DCC	4	3	0	2	3	0	15	25	20	40	-
5	ES-208	Field Training-I	DCC	4	-	-	-	-	-	-	-	-	100	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-301	Structural Geology-II	DCC	4	3	0	2	3	0	15	25	20	40	-
2	ES-303	Metamorphic Petrology	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-305	Economic Geology	DCC	4	3	0	2	3	0	15	25	20	40	-
4	ES-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
5	OEC	Open Elective Course	OEC	3	3	0	0	3	-	25	-	25	50	-
6	ES-391	Technical Communication (Advanced)	DCC	2	0	0	4	-	2	-	50	-	-	50

Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-302	Mineral Exploration	DCC	4	3	0	2	3	0	15	25	20	40	-
2	ES-304	Ore Geology	DCC	4	3	0	2	3	0	15	25	20	40	-
3	ES-306	Geomorphology	DCC	3	2	1	0	2	0	25	-	25	50	-
4	ES-308	Field Training-II	DCC	4	0	0	0	-	-	-	-	-	100	-
5	ES-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-401	Principles of Remote Sensing	DCC	3	2	1	0	2	0	25	-	25	50	-
2	ES-403	Principles of Geographic Information Systems	DCC	3	2	1	0	2	0	25	-	25	50	-
3	ES-405	Hydrogeology	DCC	3	2	1	0	2	0	25	-	25	50	-
4	ES-407	Engineering Geology	DCC	3	2	1	0	2	0	25	-	25	50	-
5	ES-409	Petroleum Geology	DCC	3	2	1	0	2	0	25	-	25	50	-
6	ES-499	Seminar-I	DCC	2	0	0	0	-	-	-	-	-	100	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-402	Geophysical Prospecting	DCC	4	3	0	2	3	0	15	25	20	40	-
2	ES-404	Well Logging	DCC	4	3	1	0	3	0	25	-	25	50	-
3	ES-406	Plate Tectonics	DCC	3	2	1	0	2	0	25	-	25	50	-
4	ES-ELE3	Departmental Elective Course-III	DEC	4	3	1	0	3	0	25	-	25	50	-
5	ES-ELE4	Departmental Elective Course-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
Fifth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-509	Comprehensive Viva Voce	DCC	2	0	0	0	-	-	-	-	-	100	-
2	ES-ELE5	Department Elective Course-V	DEC	4	3	1	0	3	0	25	-	25	50	-
3	ES-ELE6	Department Elective Course-VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	ES-599	Seminar-II	DCC	2	0	0	0	-	-	-	-	-	100	-
Fifth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	ES-500	Dissertation	DCC	18	0	0	0	-	-	-	-	-	100	-

Department of Mechanical and Industrial Engineering
BACHELOR OF TECHNOLOGY (PRODUCTION & INDUSTRIAL)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	MI-101B	Introduction to Production and Industrial Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	MI-103	Programming and Data Structure	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-006	Probability and Statistics	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-008	Electromagnetic Theory	BSC	4	3	1	0	3	0	25	-	25	50	-
3	MI-104	Manufacturing Technology-I	DCC	4	2	0	4	3	0	-	25	25	50	-
4	MI-108	Engineering Drawing	DCC	4	2	0	4	3	0	-	25	25	50	-
5	MI-110	Fluid Mechanics	DCC	4	3	1	2/2	3	0	20	20	20	40	-
6	MT-106	Material Science	ESC	4	-	-	-	-	-	-	-	-	-	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-102	Solid Mechanics	ESC	4	3	1	0	3	0	25	-	25	50	-
2	MI-203	Manufacturing Technology-II	DCC	4	2	0	4	3	0	-	25	25	50	-
3	MI-291	Engineering Analysis and Design	DCC	4	-	-	-	-	-	-	-	-	-	-
4	MI-209	Thermal Engineering	DCC	4	3	1	2/2	3	0	20	20	20	40	-
5	MI-211	Theory of Machines	DCC	4	3	1	2/2	3	0	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	2	1	0	3	-	25	-	25	50

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	2/2	3	0	20	20	20	40	-
2	MI-210	Production Planning and Control	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MI-212	Machine Design	DCC	4	2	0	4	3	0	15	25	20	40	-
4	MI-214	Engineering Economy	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MI-216	Theory of Production Processes - I	DCC	4	3	1	2/2	3	0	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	2	1	0	3	0	25	-	25	50

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-391	Technical Communication	DCC	2	0	2	0	-	-	100	-	-	-	-
2	MI-309	Theory of Production Processes - II	DCC	4	3	1	2/2	3	0	20	20	20	40	-
3	MI-311	Operations Research	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MI-313	Work System Design	DCC	4	3	0	2/2	3	0	20	20	20	40	-
5	MI-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/ OEC	Management Studies /Open Elective Course	OEC/HSS MEC	3	3	2	1	0	2	0	25	-	25	50
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-300	Industry Oriented Problem/Case Study/ Lab based project/ Practical Problem	DCC	4	0	0	6	-	-	100	-	-	-	-
2	MI-310	Quality Management	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MI-312	Operations Management	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MI-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
5	MSC1/ DHC1	Minor Specialization Course – I/Departmental Honours Course – I	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/ OEC	Management Studies /Open Elective Course	OEC/HSS MEC	3	3	2	1	0	2	0	25	-	25	50
7	MI-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-400A	B.Tech. Project	DCC	4	0	0	3	-	-	-	-	-	-	-
2	MI-ELE3	Departmental Elective Course-III	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MI-ELE4	Departmental Elective Course-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC2/ DHC2	Minor Specialization Course-II/Departmental Honours Course – II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC3/ DHC3	Minor Specialization Course-III/Departmental Honours Course – III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	MI-499	Training Seminar	DCC	2	0	2	0	-	-	100	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-400B	B.Tech. Project (Contd. From Autumn Semester)	DCC	8	0	0	12	-	-	-	-	-	-	-
2	MI-ELE5	Departmental Elective Course-V	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MI-ELE6	Departmental Elective Course-VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC4/ DHC4	Minor Specialization Course-IV/Departmental Honours Course - IV	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/ DHC5	Minor Specialization Course-V/Departmental Honours Course - V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-

Department of Mechanical and Industrial Engineering
BACHELOR OF TECHNOLOGY (MECHANICAL)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	MI-101A	Introduction to Mechanical Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	MI-103	Programming and Data Structure	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-004	Numerical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-008	Electromagnetic Theory	BSC	4	3	1	0	3	0	25	-	25	50	-
3	MI-104	Manufacturing Technology-I	DCC	4	2	0	4	3	0	-	25	25	50	-
4	MI-106	Engineering Thermodynamics	DCC	4	3	1	-	3	0	20	20	20	40	-
5	MI-108	Mechanical Engineering Drawing	DCC	4	2	0	4	3	0	-	25	25	50	-
6	MT-106	Material Science	ESC	4	3	1	0	3	0	25	-	25	50	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-102	Solid Mechanics	ESC	4	3	1	0	3	0	25	-	25	50	-
2	MI-201	Kinematics of Machines	DCC	4	3	1	-	3	0	20	20	20	40	-
3	MI-203	Manufacturing Technology-II	DCC	4	2	0	4	3	0	-	25	25	50	-
4	MI-205	Fluid Mechanics	DCC	4	3	1	-	3	0	20	20	20	40	-
5	MI-291	Engineering Analysis and Design	DCC	4	3	1	-	3	0	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	2	1	0	3	0	50	-	-	50

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	-	3	0	20	20	20	40	-
2	MI-204	Machine Drawing	DCC	4	2	0	4	4	0	-	25	25	50	-
3	MI-206	Mechanics of Materials	DCC	4	3	1	-	3	0	20	20	20	40	-
4	MI-208	Theory of Production Processes	DCC	4	3	1	-	3	0	20	20	20	40	-
5	MI-210	Energy Conversion	DCC	4	3	1	-	3	0	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	2	1	0	3	0	50	-	-	50

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-301	Dynamics of Machines	DCC	4	3	1	-	3	0	20	20	20	40	-
2	MI-303	Principles of Industrial Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MI-305	Heat and Mass Transfer	DCC	4	3	1	-	3	0	20	20	20	40	-
4	MI-ELE1	Departmental Elective Course-I	DEC	4	3	1	0	3	0	25	-	25	50	-
5	BM-ELE/ OEC	Management Studies /Open Elective Course	OEC/HSS MEC	3	3	2	-	0	2	25	-	25	50	-
6	MI-391	Technical Communication	DCC	2	0	2	0	-	-	-	-	-	100	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-300	Industry Oriented Problem/Case Study/ Lab based project/ Practical Problem	DCC	4	0	0	6	-	-	100	-	-	-	-
2	MI-302	Machine Design	DCC	6	4	0	4	4	-	20	20	20	40	-
3	MI-304	Fluid Machinery	DCC	4	3	1	-	3	0	20	20	20	40	-
4	MI-ELE2	Departmental Elective Course-II	DEC	4	3	1	0	3	0	25	-	25	50	-
5	MSC1/ DHC1	Minor Specialization Course-I/Departmental Honours Course-I	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/ OEC	Management Studies /Open Elective Course	OEC/HSS MEC	3	3	2	1	0	2	0	25	-	25	50
7	MI-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-400A	B.Tech. Project	DCC	4	0	0	3	-	-	-	-	-	-	-
2	MI-ELE3	Departmental Elective Course-III	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MI-ELE4	Departmental Elective Course-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC2/ DHC2	Minor Specialization Course-II/Departmental Honours Course – II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC3/ DHC3	Minor Specialization Course-III/Departmental Honours Course – III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	MI-499	Training Seminar	DCC	2	0	2	0	-	-	100	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MI-400B	B.Tech. Project(Contd. From Autumn Semester)	DCC	8	0	0	12	-	-	-	-	-	-	-
2	MI-ELE5	Departmental Elective Course-V	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MI-ELE6	Departmental Elective Course-VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC4/ DHC4	Minor Specialization Course-IV/Departmental Honours Course – IV	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/ DHC5	Minor Specialization Course-V/Departmental Honours Course – V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-

Department of Mathematics
INTEGRATED M.Sc. (APPLIED MATHEMATICS)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-1	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	MA-101	Introduction to Mathematical Sciences	DCC	2	2	0	0	-	-	-	-	-	100	-
7	MA-103	Introduction to Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-004	Numerical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-008	Electromagnetic Theory	BSC	4	3	1	0	3	0	25	-	25	50	-
3	MA-102	Linear Algebra	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-104	Real Analysis I	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MA-106	Data Structures	DCC	4	3	0	2	3	0	15	25	20	40	-
6	EC-102	Fundamental of Electronics	ESC	4	3	1	0	3	0	25	-	25	50	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CE-102	Solid Mechanics	ESC	4	3	1	0	3	0	25	-	25	50	-
2	MA-201	Complex Analysis I	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MA-203	Discrete Mathematics	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-205	Ordinary and Partial Differential Equations	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MA-291	Design and Analysis of Algorithms	DCC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	HS-ELE	HSS Elective Course	HSSMEC	4	-	-	-	-	-	-	-	-	-	-
2	CE-142	Fluid Mechanics	ESC	4	3	1	0	3	0	25	-	25	50	-
3	MA-202	Transform Techniques	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-204	Database Management System	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MA-206	Graph Theory	DCC	4	3	1	0	3	0	25	-	25	50	-
6	MA-208	Number Theory	DCC	4	3	1	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-301	Abstract Algebra I	DCC	4	3	1	0	3	0	25	-	25	50	-
2	MA-303	Mathematical Statistics	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MA-305	Linear Programming	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-ELE1	Department Elective I	DEC	3	3	0	0	3	0	25	-	25	50	-
5	BM-ELE	Management Elective Course	HSSMEC	3	3	0	0	-	-	25	-	25	50	-
6	MA-391	Technical Communication	DCC	2	2	0	0	-	-	25	-	25	50	-

Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-300	Project	DCC	4	-	-	-	-	-	-	-	30	70	-
2	MA-302	Math. Modeling & Simulation	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MA-304	Theory of Computation	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-ELE2	Department Elective II	DEC	3	3	0	0	3	0	25	-	25	50	-
5	OEC	Open Elective-I	OEC	3	3	0	0	-	-	-	-	-	-	-
6	MSC1	Minor Specialization Course	MSC	3/4	3	-	0	3	0	-	-	-	50	-
7	MA-399	Educational Tour	DCC	0	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-501	Theory of Ordinary Differential Equations	DCC	3	3	0	0	3	0	25	-	25	50	-
2	MA-503	Real Analysis II	DCC	3	3	0	0	3	0	25	-	25	50	-
3	MA-505	Topology	DCC	3	3	0	0	3	0	25	-	25	50	-
4	MA-507	Statistical Inference	DCC	3	3	0	0	3	0	25	-	25	50	-
5	MA-ELE3	Department Elective III	DEC	3/4	3	-	0	3	0	-	-	-	50	-
6	OEC	Open Elective II	OEC	3	3	0	-	3	0	15	0/25	-	-	-
7	MSC2	Minor Specialization Course	MSC	3/4	3	-	0	3	0	-	-	-	50	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-502	Advanced Numerical Analysis	DCC	4	3	1	0	3	0	25	-	25	50	-
2	MA-504	Abstract Algebra II	DCC	3	3	0	0	3	0	25	-	25	50	-
3	MA-506	Nonlinear Programming	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MA-508	Theory of Partial Differential Equations	DCC	3	3	0	0	3	0	25	-	25	50	-
5	MA-510	Complex Analysis II	DCC	3	3	0	0	3	0	25	-	25	50	-
6	MA-ELE4	Department Elective IV	DEC	3/4	3	-	0	3	0	-	-	-	50	-
7	MSC3	Minor Specialization Course	MSC	3/4	3	-	0	3	0	-	-	-	50	-
Fifth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-601	Fluid Dynamics	DCC	3	3	0	0	3	0	25	-	25	50	-
2	MA-603	Tensors and Differential Geometry	DCC	3	3	0	0	3	0	25	-	25	50	-
3	MA-605	Functional Analysis	DCC	3	3	0	0	3	0	25	-	25	50	-
4	MA-699	Seminar	DCC	2	-	-	-	-	-	-	-	30	70	-
5	MA-ELE5	Department Elective V	DEC	3	3	0	0	3	0	25	-	25	50	-
6	MA-ELE6	Department Elective VI	DEC	3	3	0	0	3	0	25	-	25	50	-
Fifth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-600	Dissertation	DCC	12	-	-	-	-	-	-	-	30	70	-
2	MA-ELE7	Department Elective VII	DEC	3	3	0	0	3	0	25	-	25	50	-
3	MSC4	Minor Specialization Course	MSC	3/4	3	-	0	3	0	25	-	25	50	-
4	MSC5	Minor Specialization Course	MSC	3/4	3	-	0	3	0	25	-	25	50	-

Department of Physics
INTEGRATED M.Sc. (PHYSICS)

First Year (Autumn Semester)

S.N o.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-001	Mechanics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	PH-101	Introduction to Physical Science	DCC	2	2	0	0	0	0	-	-	-	100	-
7	PH-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.N o.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-004	Numerical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
2	CY-004	General Chemistry-I	BSC	4	3	0	2	3	-	15	25	20	40	-
3	PH-010	Introduction to Electronics	DCC	4	3	1	0	3	-	25	-	25	50	-
4	EE-112	Electrical Science	ESC	4	3	1	-	3	-	20	20	20	40	-
5	MI-106	Engineering Thermodynamics	ESC	4	3	1	0	3	-	25	-	25	50	-
6	MI-108	Mechanical Engineering Drawing	ESC	4	2	0	4	3	-	-	25	25	50	-

Second Year (Autumn Semester)

S.N o.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-201	Physical Chemistry-I	BSC	3	2	1	0	2	0	25	-	25	50	-
2	CY-202	Basic Inorganic Chemistry	BSC	3	2	1	0	2	0	25	-	25	50	-
3	MA-205	Ordinary and Partial Differential Equation	BSC	4	3	1	0	3	0	25	-	25	50	-
4	PH-201	Optics	DCC	5	3	1	2	3	0	15	25	20	40	-
5	PH-203	Elements of Classical Mechanics	DCC	4	3	1	0	3	-	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	2	0	25	-	25	50	-

Second Year (Spring Semester)

S.N o.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-203	Organic Chemistry-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	MA-102	Linear algebra	BSC	4	3	1	0	3	-	25	-	25	50	-
3	PH-202	Electricity and Magnetism	DCC	5	3	1	2	3	0	15	25	20	40	-
4	PH-212	Thermal Physics	DCC	5	3	1	2	3	3	15	25	20	40	-
5	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	2	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH-301	Plasma Physics	DCC	3	3	0	0	3	0	25	-	25	50	-
2	PH-303	Quantum Physics	DCC	4	3	1	0	3	-	25	-	25	50	-
3	PH-305	Properties of Matter and Acoustics	DCC	4	3	1	0	3	-	25	-	25	50	-
4	PH-307	Atomic Physics	DCC	4	3	1	0	3	-	25	-	25	50	-
5	PH-309	Laboratory Work I	DCC	3	0	0	6	-	4	-	50	-	-	50
6	BM-ELE/ OEC	Open Elective Course/Management Studies Elective Course	OEC/ HSSMEC	3	2	1	0	2	-	25	-	25	50	-
7	MSC1	Minor Specialization Course- I	MSC	3	-	-	-	-	-	-	-	-	-	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH-302	Laboratory Work II	DCC	3	0	0	6	-	4	-	50	-	-	50
2	PH-304	Elements of Condensed Matter Physics	DCC	4	3	1	0	3	-	25	-	25	50	-
3	PH-306	Special Theory of Relativity	DCC	3	2	1	0	2	0	25	-	25	50	-
4	PH-308	Nuclear Physics and its Applications	DCC	4	3	1	0	3	-	25	-	25	50	-
5	BM-ELE/ OEC	Open Elective Course/Management Studies Elective Course	OEC/ HSSMEC	3	2	1	0	2	-	25	-	25	50	-
6	MSC2	Minor Specialization Course- II	MSC	3	-	-	-	-	-	-	-	-	-	-
7	MSC3	Minor Specialization Course- III	MSC	4	-	-	-	-	-	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH-501	Semiconductor Devices	DCC	3	3	0	0	3	0	25	0	25	50	0
2	PH-503	Quantum Mechanics – I	DCC	4	3	1	0	3	0	25	0	25	50	0
3	PH-505	Mathematical Physics	DCC	3	3	0	0	3	0	25	0	25	50	0
4	PH-507	Classical Electrodynamics	DCC	4	3	1	0	3	0	25	0	25	50	0
5	PH-509	Classical Mechanics	DCC	3	3	0	0	3	0	25	0	25	50	0
6	PH-511	Computational Physics	DCC	3	2	0	2	2	2	15	25	20	40	0
7	MSC4	Minor Specialization Course- IV	MSC	4	-	-	-	-	-	-	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH-502	Laboratory Work III	DCC	3	0	0	6	0	4	0	50	0	0	50
2	PH-504	Condensed Matter Physics	DCC	3	3	0	0	3	0	25	0	25	50	0
3	PH-506	Statistical Mechanics	DCC	3	3	0	0	3	0	25	0	25	50	0
4	PH-508	Quantum Mechanics - II	DCC	3	3	0	0	3	0	25	0	25	50	0
5	PH-510	Nuclear and Particle Physics	DCC	2	2	0	0	2	0	25	0	25	50	0
6	PH-512	Physics of Earth's Atmosphere	DCC	2	2	0	0	2	0	25	0	25	50	0
7	PH-514	Molecular Spectroscopy and Lasers	DCC	2	2	0	0	2	0	25	0	25	50	0
8	MSC5	Minor Specialization Course- V	MSC	4	-	-	-	-	-	-	-	-	-	-

Fifth Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH-ELE1	Departmental Elective – Group A	DEC	4	3	1	0	3	0	25	0	25	50	0
2	PH-ELE2	Departmental Elective – Group B	DEC	3	0	0	6	0	3	0	50	0	0	50
3	PH-ELE3	Departmental Elective – Group C	DEC	3	3	0	0	3	0	25	0	25	50	0
4	PH-ELE4	Departmental Elective – Group C	DEC	3	3	0	0	3	0	25	0	25	50	0
5	PH-ELE5	Departmental Elective – Group C	DEC	3	3	0	0	3	0	25	0	25	50	0
7	PH-699	Seminar	DCC	2	0	0	0	0	0	0	0	0	0	0

Fifth Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PH- ELE6	Departmental Elective – Group D	DEC	3	3	1	0	3	0	25	0	25	50	0
3	PH-600	Dissertation	DCC	12	0	0	0	0	0	0	0	0	0	0

Department of Metallurgical and Materials Engineering
BACHELOR OF TECHNOLOGY (METALLURGICAL & MATERIALS)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PH-007	Modern Physics	BSC	4	3	0	2	3	0	15	25	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication Skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	MT-101	Introduction to Metallurgical and Materials Engineering	DCC	2	2	0	0	2	-	-	-	-	100	-
7	MT-103	Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	CY-006	General Chemistry-II	BSC	4	3	0	2	3	0	15	25	20	40	-
2	MA-002	Mathematical Methods	BSC	4	3	1	0	3	0	25	-	25	50	-
3	MT-102	Metallurgical Thermodynamics and Kinetics	DCC	4	3	1	0	3	0	25	-	25	50	-
4	MT-104	Structural Metallurgy	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MT-110	Metallography Lab	DCC	2	0	0	3	0	3	-	50	-	-	50
6	MI-108	Mechanical Engineering Drawing	ESC	4	2	0	4	3	0	-	25	25	50	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	4/2	3	0	20	20	20	40	-
2	MT-201	Transport Phenomena	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MT-203	Phase Transformation and Heat Treatment	DCC	4	3	1	4/2	3	0	20	20	20	40	-
4	MT-205	Mechanical Behaviour of Materials	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MT-207	Electrical and Electronic Materials	DCC	4	3	1	0	3	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EC-102	Fundamentals of Electronics	ESC	4	3	1	4/2	3	0	20	20	20	40	-
2	MT-204	Metal Casting and Joining	DCC	4	3	0	2	3	0	15	25	20	40	-
3	MT-206	Non-ferrous Metallurgy	DCC	4	3	1	0	0	0	25	-	25	50	-
4	MT-208	Engineering Polymers and Composites	DCC	4	3	1	0	3	0	25	-	25	50	-
5	MT-292	Engineering Analysis and Design	DCC	4	3	0	2	3	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-301	Mechanical Working of Metals	DCC	4	3	0	2	3	0	15	25	20	40	-
2	MT-303	Iron and Steel Making	DCC	4	3	1	0	3	0	25	-	25	50	-
3	MT-305	Materials Testing Lab	DCC	2	0	0	3	0	3	-	50	-	-	50
4	MT-307	Materials Characterization	DCC	4	3	0	2	3	0	15	25	20	40	-
5	MT-ELE1	Departmental Elective Course – I	DEC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/OEC	Management Studies / Open Elective Course	OEC/HSS MEC	3	3	0	0	3	0	25	-	25	50	-
7	MT-391	Technical Communication	DCC	2	3	0	0	3	0	25	-	25	50	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-300	Industry Oriented Problem/ Case Study/ Lab based project/ Practical Problem	DCC	4	-	-	-	-	-	-	-	-	-	-
2	MT-302	Environmental Degradation of Materials	DCC	4	3	0	2	3	0	15	25	20	40	-
3	MT-304	Ceramics and Metal Powder Processing	DCC	4	3	0	4/2	3	0	20	20	20	40	-
4	MT-ELE2	Departmental Elective Course – II	DEC	4	3	1	0	3	0	25	-	25	50	-
5	MSC1/DHC1	Minor Specialization Course – I/Departmental Honours Course - I	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/OEC	Management Studies / Open Elective Course	OEC/HSS MEC	3	3	0	0	3	0	25	-	25	50	-
7	MT-399	Educational Tour	DCC	0	0	0	0	0	0	-	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-400A	B.Tech. Project	DCC	4	0	0	4	-	-	-	-	-	-	-
2	MT-ELE3	Departmental Elective Course – III	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MT-ELE4	Departmental Elective Course – IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC2/DHC2	Minor Specialization Course – II/Departmental Honours Course - II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC3/DHC3	Minor Specialization Course – III/Departmental Honours Course - III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-400B	B.Tech. Project (Contd. from Autumn Sem.)	DCC	8	0	0	1/2	-	-	-	-	-	-	100
2	MT-ELE5	Departmental Elective Course – V	DEC	4	3	1	0	3	0	25	-	25	50	-
3	MT-ELE6	Departmental Elective Course – VI	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC4/DHC4	Minor Specialization Course – IV/Departmental Honours Course – IV	MSC/DHC	4	3	0	2	3	0	15	25	20	40	-
5	MSC5/DHC5	Minor Specialization Course – V/Departmental Honours Course - V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-

Department of Paper Technology

INTEGRATED DUAL DEGREE - B.TECH (PROCESS ENGG) & M.B.A.

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	0	25	-	25	50	-
2	AS-041	General Chemistry	BSC	4	3	1	-	3	0	20	20	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001B	Communication Skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
	HS-001A	Communication skills (Basic)	HSSMEC	2	1	0	2	2	0	25	-	25	50	-
5	HS-002	Ethics and Self-Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	PE-101B	Introduction to Process Engineering	DCC	2	2	0	0	2	0	-	-	-	100	-
7	PE-103	Introduction to Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AS-002	Mathematics-II	BSC	4	3	1	0	3	0	25	-	25	50	-
2	PP-102	Material and Energy Balance	DCC	4	3	1	0	3	0	25	-	25	50	-
3	PP-104	Fluid Mechanics	DCC	4	3	1	-	3	3	20	20	20	40	-
4	PE-152	Chemical Process Technology	DCC	4	3	0	-	3	0	20	20	20	40	-
5	AS-021	Applied Physics	BSC	4	3	0	2	3	2	15	25	20	40	-
6	MI-108	Mechanical Engineering Drawing	ESC	4	2	0	4	3	0	-	25	25	50	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-106	Materials Science	ESC	4	3	1	0	3	0	25	-	25	50	-
2	PE-251	Mechanical Operations	DCC	4	3	1	-	3	3	20	20	20	40	-
3	PP-203	Heat Transfer	DCC	4	3	1	-	3	3	20	20	20	40	-
4	PE-253	Energy Technology	DCC	2	2	0	0	2	0	15	25	20	40	-
5	PE-291	Engineering Analysis and Design	DCC	3	2	1	0	3	0	25	-	25	50	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	3	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	-	3	0	20	20	20	40	-
2	PE-252	Chemical Engineering Thermodynamics	DCC	3	2	1	0	3	0	25	-	25	50	-
3	PE-208	Mass Transfer	DCC	4	3	1	-	3	3	20	20	20	40	-
4	PE-254	Chemical Reaction Engineering	DCC	4	3	1	-	3	3	20	20	20	40	-
5	PE-256	Biochemical Engineering	DCC	4	3	1	-	3	3	20	20	20	40	-
6	PE-292	Technical Communication	DCC	2	0	2	0	0	0	100	-	-	-	-
7	HS-ELE	HSS Elective course	HSSMEC	3	2	1	0	3	0	25	-	25	50	-

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-351	Transport Phenomena	DCC	4	3	1	0	3	0	25	-	25	50	-
2	PE-353	Process Instrumentation and Control	DCC	4	3	1	-	3	3	20	20	20	40	-
3	PE-355	Modeling and Simulation	DCC	4	3	1	0	3	0	25	-	25	50	-
4	PE-ELE1	Departmental Elective -I	DEC	3	3	0	0	3	0	25	-	25	50	-
5	BM-ELE/OEC	Courses from Management Studies /Open Elective Course	OEC/HSS MEC	3	2	1	0	3	0	25	-	25	50	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-300	Industry Oriented Problem/ Case Study/Lab Based Project/Practical Problem	DCC	3	0	0	6	0	0	-	50	-	-	50
2	PE-352	Pollution Control Engineering	DCC	3	2	1	-	3	3	20	20	20	40	-
3	PE-354	Chemical Plant Design and Economics	DCC	4	3	1	0	3	0	25	-	25	50	-
4	PE-356	Financial and Management Accounting	DCC	3	3	0	0	3	0	25	-	25	50	-
5	PE-ELE2	Departmental Elective -II	DEC	3	3	0	0	3	0	25	-	25	50	-
6	BM-ELE/OEC	Courses from Management Studies /Open Elective Course	OEC/HSS MEC	3	2	1	0	3	0	25	-	25	50	-
7	PE-399	Educational Tour	DCC	0	-	-	-	0	0	100	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-400A	B.Tech. Project (Contd. From Autumn Semester)	DCC	4	0	8	1	0	0	100	-	-	-	-
2	PE-401	Financial Management	DCC	3	2	1	0	3	0	25	-	25	50	-
3	PE-403	Marketing Management	DCC	3	2	1	0	3	0	25	-	25	50	-
4	PE-ELE3	Departmental Elective –III	DEC	3	3	0	0	3	0	25	-	25	50	-
5	PE-ELE4	Departmental Elective –IV	DEC	3	3	0	0	3	0	25	-	25	50	-
6	PE-499	Industrial Training and Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-400B	B.Tech. Project (Contd. From Autumn Semester)	DCC	8	0	0	16	0	0	100	-	-	-	-
2	PE-402	Operations Management	DCC	3	2	1	0	3	0	25	-	25	50	-
3	PE-404	Human Resources Management	DCC	2	2	0	0	2	0	25	-	25	50	-
4	PE-ELE5	Departmental Elective –V	DEC	3	3	0	0	3	0	25	-	25	50	-
5	PE-ELE6	Departmental Elective –VI	DEC	3	3	0	0	3	0	25	-	25	50	-

Fifth Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-500A	MBA Dissertation Part-I	DCC	0	0	0	1	0	0	-	-	-	-	-
2	PE-501	Research Methodology and Business Statistics	DCC	3	3	0	0	3	0	25	-	25	50	-
3	PE-503	Business Environment	DCC	2	2	0	0	2	0	25	-	25	50	-
4	PE-SELE1	Specialization Elective I	DEC	2	2	0	0	2	0	25	-	25	50	-
5	PE-SELE2	Specialization Elective II	DEC	2	2	0	0	2	0	25	-	25	50	-
6	PE-SELE3	Specialization Elective III	DEC	2	2	0	0	2	0	25	-	25	50	-
7	PE-SELE4	Specialization Elective IV	DEC	2	2	0	0	2	0	25	-	25	50	-
8	PE-599	Management Training and Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-

Fifth Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-500B	MBA Dissertation Part-II	DCC	6	0	0	1 2	0	0	100	-	-	-	-
2	PE-502	Strategic Management	DCC	2	2	0	0	2	0	25	-	25	50	-
3	PE-504	Business law	DCC	3	3	0	0	2	0	25	-	25	50	-
4	PE-SELE5	Specialization Elective V	DEC	2	2	0	0	2	0	25	-	25	50	-
5	PE-SELE6	Specialization Elective VI	DEC	2	2	0	0	2	0	25	-	25	50	-
6	PE-SELE7	Specialization Elective VII	DEC	2	2	0	0	2	0	25	-	25	50	-
7	PE-SELE8	Specialization Elective VIII	DEC	2	2	0	0	2	0	25	-	25	50	-

Department of Paper Technology

BACHELOR OF TECHNOLOGY (Polymer Science and Technology)

First Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MA-001	Mathematics-I	BSC	4	3	1	0	3	-	25	-	25	50	-
2	AS-041	General Chemistry	BSC	4	3	1	-	3	2	20	20	20	40	-
3	CE-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	25	-	25	50	-
4	HS-001A	Communication skills (Basic)	HSSMEC	2	1	0	2	2	-	25	-	25	50	-
	HS-001B	Communication skills (Advance)	HSSMEC	2	-	-	-	-	-	-	-	-	-	-
5	HS-002	Ethics and Self-Awareness	HSSMEC	2	1	1	0	2	0	25	-	25	50	-
6	PE-101A	Introduction to Polymer Engineering	DCC	2	2	0	0	0	0	-	-	-	100	-
7	PE-103	Introduction to Computer Programming	ESC	4	3	0	2	3	0	15	25	20	40	-

First Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	AS-002	Mathematics-II	BSC	4	3	1	0	3	-	25	-	25	50	-
2	AS-021	Applied Physics	BSC	4	3	0	2	3	2	15	25	20	40	-
3	PE-102	Structure and Properties of Polymers	DCC	4	3	1	-	2	3	20	20	20	40	-
4	PP-102	Material and Energy Balance	DCC	4	3	1	0	3	0	25	-	25	50	-
5	PP-104	Fluid Mechanics	DCC	4	3	1	-	-	-	20	20	20	40	-
6	MI-106	Engineering Thermodynamics	ESC	4	3	1	-	2	-	20	20	20	40	-

Second Year (Autumn Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	MT-106	Materials Science	ESC	4	3	1	0	3	-	25	-	25	50	-
2	PE-201	Polymer Chemistry	DCC	4	2	1	3	2	3	15	25	20	40	-
3	PE-205	Polymer Blends and Composites	DCC	4	3	1	0	3	-	25	-	25	50	-
4	PE-291	Engineering Analysis and Design	DCC	3	3	1	0	3	-	25	-	25	50	-
5	PP-203	Heat Transfer	DCC	4	3	1	-	3	3	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	2	0	25	-	25	50	-

Second Year (Spring Semester)

S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	EE-112	Electrical Science	ESC	4	3	1	0	3	0	25	0	25	50	0
2	PE-206	Polymer Properties and Characterization	DCC	4	2	1	3	2	0	15	25	20	40	-
3	PE-208	Polymer Rheology	DCC	4	2	1	3	2	0	15	25	20	40	-
4	PE-254	Chemical Reaction Engineering	DCC	4	3	1	0	3	-	25	-	25	50	-
5	PP-208	Mass Transfer	DCC	4	3	1	-	3	3	20	20	20	40	-
6	HS-ELE	HSS Elective Course	HSSMEC	3	2	1	0	2	0	25	0	25	50	0

Third Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-301	Polymer Product Technology	DCC	4	3	1	0	3	0	25	-	25	50	-
2	PE-303	Polymer Reaction Engineering	DCC	4	3	1	0	3	0	25	-	25	50	-
	BM-ELE/OEC	Courses from Management Studies /Open elective course*	OEC/HSS MEC	3	2	1	0	3	0	25	-	25	50	-
3	PE-305	Polymer Processing	DCC	4	3	1	-	3	0	20	20	20	40	-
4	PE-ELE1	Departmental Elective-I	DEC	4	3	1	0	2	0	25	-	25	50	-
6	PP-391	Technical Communication	DCC	2	0	2	0	0	0	100	-	-	-	-
Third Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-300	Lab Based Project	DCC	4	0	0	8	0	0	100	-	-	-	-
2	PE-302	Rubber Material and Chemistry	DCC	4	3	1	-	3	2	20	20	20	40	-
3	PE-304	Process System Analysis and Control	DCC	4	3	1	0	3	-	25	-	25	50	-
4	PE-ELE2	Departmental Elective-II	DEC	4	3	1	0	2	0	25	-	25	50	-
5	MSC1/DHC1	Minor Specialization Course-I/Departmental Honours Course-I	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	BM-ELE/OEC	Courses from Management Studies /Open elective course*	OEC/HSS MEC	3	2	1	0	3	0	25	-	25	50	-
7	PE-399	Educational Tour	DCC	0	-	-	-	0	0	100	-	-	-	-
Fourth Year (Autumn Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-400A	B. Tech. Project	DCC	4	0	0	8	0	0	100	-	-	-	-
2	PP-ELE3	Departmental Elective-III	DEC	4	3	1	0	0	0	0	25	25	50	0
3	PE-ELE4	Departmental Elective-IV	DEC	4	3	1	0	3	0	25	-	25	50	-
4	MSC2/DHC2	Minor Specialization Course-II/Departmental Honours Course-II	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC3/DHC3	Minor Specialization Course-III/Departmental Honours Course-III	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
6	PE-499	Training and Seminar	DCC	2	0	2	0	0	0	100	-	-	-	-
Fourth Year (Spring Semester)														
S.No.	Code	Title	Area	Cr	L	T	P	TH	PH	CWS	PRS	MTE	ETE	PRE
1	PE-400B	B. Tech. Project (Contd. From Autumn Semester)	DCC	8	0	0	16	0	0	100	-	-	-	-
2	PE-ELE5	Departmental Elective-V	DEC	3	3	0	0	3	0	25	-	25	50	-
3	PE-ELE6	Departmental Elective-VI	DEC	3	3	0	0	3	0	25	-	25	50	-
4	MSC4/DHC4	Minor Specialization Course-IV/Departmental Honours Course-IV	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-
5	MSC5/DHC5	Minor Specialization Course-V/Departmental Honours Course-V	MSC/DHC	4	3	1	0	3	0	25	-	25	50	-

SYLLABI OF FIVE COMMON COURSES OFFERED IN THE AUTUMN SEMESTER OF FIRST YEAR

HS-001 A : Communication Skills (Basic)

Contact Hours: L: 1 T: 0 P: 2 Cr: 02

Understanding the Basics of Communication Skills: Listening, Speaking, Reading & Writing, Scope and Importance. Grammar & Composition: Time and Tense, Agreement, Active-Passive, Narration, Use of Determiners, Prepositions & Phrasal Verbs. Vocabulary Building & Writing: Word-formation, Synonyms, Antonyms, Homonyms, One-word Substitutes, Idioms and Phrases, Collocations, Abbreviations of Scientific and Technical Words. Introduction to Sounds (Vowels & Consonants) Organs of Speech, Place and Manner of Articulation, Stress & Intonation, Listening Comprehension (Practical Sessions in Language Laboratory). Speaking, Countering Stage-fright and Related Barriers to Communication. Reading and Comprehension: Two lessons to be identified by the department.

References:

1. Murphy, Raymond. Intermediate English Grammar, New Delhi, Cambridge University Press, 2009.
2. Quirk, Randolph and Sidney Greenbaum. A University Grammar of English, New Delhi, Pearson, 2009.
3. McCarthy, Michael and Felicity O' Dell. English Vocabulary in Use, New Delhi, Cambridge University Press, 2010.

HS-001 B: Communication Skills (Advanced)

Contact Hours: L : 1 T: 0 P: 2 Cr: 02

Advanced Communication Skills: Scope, Relevance, & Importance. Soft Skills: Interpersonal Communication; Verbal & Non-verbal, Persuasion, Negotiation, Neuro-Linguistic Programming. Communication and Media (Social and Popular), The Social and Political Context of Communication, Recent Developments and Current Debates in Media. Cross cultural and Global Issues in Communication: Race, Ethnicity, Gender & Diaspora. Rhetoric and Public Communication, Audience Awareness, Emotionality.

References:

1. Rentz, Kathryn, Marie E. Flatley and Paula Lentz. Lesikar's Business Communication Connecting IH A Digital World, McGraw-hill, Irwin, 2012.
2. Bovee, Courtland L and John V. Thill. Business Communication Today. New Delhi, Pearson Education, 2010.
3. McMurrey, David A. and Joanne Buckley.

Handbook for Technical Writing, New Delhi, Cengage Learning, 2009.

CE-105: Introduction to Environmental Studies

Contact Hours: L: 3 T: 0 P: 0 Cr: 03

Overview: Environment and Natural Processes; Development (Resource Utilization & Waste Generation); Environmental issues; Concept of Sustainable Development; Issues affecting future development (population, urbanization, health, water scarcity, energy, climate change, toxic chemicals, finite resources etc.); Environmental units. Air –Water interaction: (Liquid phase-gas phase equilibrium) Henry's Law. Constant with units, Dimensionless Henry's Law Constant. Water–Soil Interaction: Carbonate System (Alkalinity and buffering capacity); Major ions in water; Natural Organic Matter (NOMs); Water quality parameters; Physical processes (Mass Balance): Spatio-temporal variation in quality of river water, lake water, ground water; Water quality standards. Wetlands, water treatment and wastewater treatment. Air resources: Atmosphere; Air pollutants; Emissions and control of air pollutants; Atmospheric meteorology and dispersion; Transport of air (global, regional, local); Air/ atmospheric stability; Plume shape; Gaussian modeling; Air quality standards. Land pollution and solid waste management. Ecosystem: Structure and function; Energy flow in ecosystem; Material flow in ecosystem; Biodiversity and ecosystem health; Bio - amplification and bio magnification. Hazardous Waste: Definition; Classification; Storage and management; Site remediation; Environmental Risk: assessment, and management.

References:

1. Davis M. L. and Cornwell D. A., "Introduction to Environmental Engineering", McGraw Hill, New York 4/e, 2008.
2. Masters G. M., Joseph K. and Nagendran R. "Introduction to Environmental Engineering and Science", Pearson Education, New Delhi. 2/e, 2007.
3. Peavy H. S., Rowe D.R. and Tchobanoglous G., "Environmental Engineering", McGraw Hill, New York. 1986.

HS-002 : Ethics and Self Awareness

Contact Hours: L: 1 T: 1 P: 0 Cr: 02

Introduction: Definition of Ethics; Approaches to Ethics: Psychological, Philosophical, Social. Psycho-social theories of moral development: View of Kohlberg; Morality and Ideology, Culture and Morality, Morality in everyday context. Ethical Concerns: Work Ethics and

Work Values, Business Ethics, Human values in organizations. Self-Awareness: Self Concept: Johari Window, Self and Culture, Self Knowledge, Self-Esteem; Perceived Self-control, Self-serving bias, Self presentation, Self-growth: Transactional Analysis and Life Scripts. Self Development: Character strengths and virtues, Emotional intelligence, Social intelligence, Positive cognitive states and processes (Self-efficacy, Empathy, Gratitude, Compassion, and Forgiveness).

References:

1. Hall, Calvin S., Lindzey, Dardner, and Cambell, John B., "Theories of Personality", Hamilton Printing Company, 1998.
2. Car Alan, "Positive Psychology: The Science of Happiness and Human Strengths", Brunner-Routledge, 2004.
3. Leary M.R., "The Curse of Self: Self-awareness, Egotism and the Quality of Human Life", Oxford University Press, 2004.

MA-001 : Mathematics-I

Contact Hours: L: 3 T: 1 P: 0

Cr: 04

Matrix Algebra: Elementary operations and their use in getting the Rank, Inverse of a Matrix and solution of linear simultaneous equations. Orthogonal, Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian, Normal & unitary matrices and their elementary properties. Eigenvalues and Eigenvectors of a matrix, Cayley-Hamilton theorem, Diagonalization of a matrix. Infinite Series: Convergence of infinite series, Comparison test, Ratio test, Cauchy Root test, Raabe's test, Logarithmic test,

De-Morgan's test, cauchy Integral test. Differential Calculus: Limit, Continuity and differentiability of functions of two variables, Euler's theorem for homogeneous equations, Tangent plane and normal. Change of variables, chain rule, Jacobians, Taylor's Theorem for two variables, Error approximations. Extrema of functions of two or more variables, Lagrange's method of undetermined multipliers. Integral Calculus: Review of curve tracing and quadric surfaces, Double and Triple integrals, Change of order of integration. Change of variables. Gamma and Beta functions. Dirichlet's integral. Applications of Multiple integrals such as surface area, volumes, centre of gravity and moment of inertia. Vector Calculus: Differentiation of vectors, gradient, divergence, curl and their physical meaning. Identities involving gradient, divergence and curl. Line and surface integrals. Green's, Gauss and Stroke's theorem and their applications.

References:

1. E. Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley and Sons, Inc., U.K., 2011.
2. R.K. Jain and S.R.K. Iyenger, Advance Engineering Mathematics, 2nd Edition, Narosa Publishing House, 2005.
3. M.D. Weir, J. Hass, F.R. Giordano, Thomas' Calculus, 11th Edition, Pearson Education, 2008.

कुल गीत

जयति जयति विद्या संस्थान,
हिम गिरि श्रृंगों से अभिनंदित,
गंगा जल करते कल गान । जयति ॥

शिक्षा आदर्शों में उन्नत,
जीवन शिल्पी भू रचना रत,
'श्रमं बिना न किमपि साध्यं व्रत,
यन्त्र कला कौशल अभियान । जयति ॥

जन जीवन प्रासाद उठाकर,
सेतु बांध भू खण्ड जुड़ाकर,
अंतरिक्ष में यान उड़ाकर,
नव युग को देता आह्वान । जयति ॥

सर्जन हित जीवन नित अर्पित,
धरा स्वर्ग शोभा कर निर्मित,
वैज्ञानिक युग पट में मूर्तित,
भू पर लाता स्वर्ण विहान । जयति ॥

नयी प्रेरणा से दीपित मन,
नव स्वपनों से हर्षित लोचन,
नए सत्य की उर में धड़कन,
ध्येय राष्ट्र जीवन कल्याण । जयति ॥

