HANDBOOK OF INFORMATION

Academic Year – 2026-27



POSTGRADUATE PROGRAMME

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Academic Year 2026-27



INDIAN INSTITUTE OF TECHNOLOGY ROPAR

Rupnagar, Punjab-140001(INDIA)

www.iitrpr.ac.in

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Abbreviations

- BME Biomedical Engineering
- CE Civil Engineering
- CFTI Centrally Funded Technical Institute
- CHE Chemical Engineering
- CSE Computer Science and Engineering
- CSIR-NET CSIR National Eligibility Test
- EE Electrical Engineering
- GOI Government of India
- HoD Head of the Department
- HTTA Half Time Teaching/Research Assistantship
- ME Mechanical Engineering
- MME Metallurgical and Materials Engineering
- MoE Ministry of Education
- CY Chemistry
- MA Mathematics
- PH Physics
- HS Humanities & Social Sciences
- UGC-NET UGC National Eligibility Test
- ACPGR Academic Council for Postgraduate & Research
- AIDE Artificial Intelligence & Data Engineering
- CoE-SARDS Center of Excellence for Studies and Applied Research in Defense and Security
- CARDS Center for Applied Research in Data Science
- CEE Center for Engineering Education
- CREED Center of Research for Energy Efficiency and Decarbonization
- IT JRC Indo-Taiwan Joint Research Center on Artificial Intelligence and Machine Learning

1. Introduction

1.1 Background

The Indian Institute of Technology Ropar is one of the eight IITs set up by the Ministry of Education (MoE), Government of India in 2008. In keeping with the spirit of the IIT system, this Institute is committed to provide state-of-the-art technical education in a variety of fields, and also to facilitate transmission of knowledge using the latest developments in pedagogy. The Indian Institute of Technology Ropar started functioning from the Academic Year 2008-09 from the campus of IIT Delhi, the mentor Institute. The foundation stone laying ceremony was held on 24 February 2009. The Indian Institute of Technology Ropar was registered under the Societies' Registration Act 1860 on 29 July 2009. Subsequently, the Institute has been established by an Act of Parliament name the Institutes of Technology Act (Amendment) Act 2012 (No.34 of 2012). The Institute shifted to its permanent campus and currently operates from its permanent campus. This campus of IIT Ropar is spread across 501 acres of land located in Rupnagar in the lap of nature at the banks of river Satluj. It has been awarded the 5 Star GRIHA (Green Rating for Integrated Habitat Assessment) rating, one of the highest National ratings for Green Buildings.

1.2 Departments

Each course is offered by an academic unit called Department. The various Departments and their two letter codes are given below. Some courses are offered jointly by multiple academic units and are classified as interdisciplinary courses.

Academic Departments

Sr. No.	Name of Academic Unit (alphabetical order)	Code
1	Biomedical Engineering	BM
2	Chemical Engineering	CH
3	Chemistry	CY
4	Civil Engineering	CE
5	Computer Science & Engineering	CS
6	Electrical Engineering	EE
7	Humanities & Social Sciences	HS
8	Mathematics	MA
9	Mechanical Engineering	ME
10	Metallurgical and Materials Engineering	MM
11	Physics	PH
12	Artificial Intelligence & Data Engineering	AIDE
Centers		
1	Center of Excellence for Studies and Applied Research in Defense and Security	CoE-SARDS
2	Center for Applied Research in Data Science	CARDS
3	Center for Engineering Education	CEE

4	Center of Research for Energy Efficiency and Decarbonization	CREED
5	Indo-Taiwan Joint Research Center on Artificial Intelligence and Machine Learning	IT JRC
6	Centre of Drones and Autonomous Systems	DRAS

1.3 Programmes Offered

IIT Ropar offers academic programmes for students with a wide range of backgrounds. Admission to these programmes is based on the students' performance in national level tests/entrance examination. For all postgraduate programmes, students are admitted after they have obtained at least a college level Bachelor's degree. As this course of study would indicate, there is considerable overlap in courses for senior undergraduate students and junior postgraduate students. The various programmes are listed below

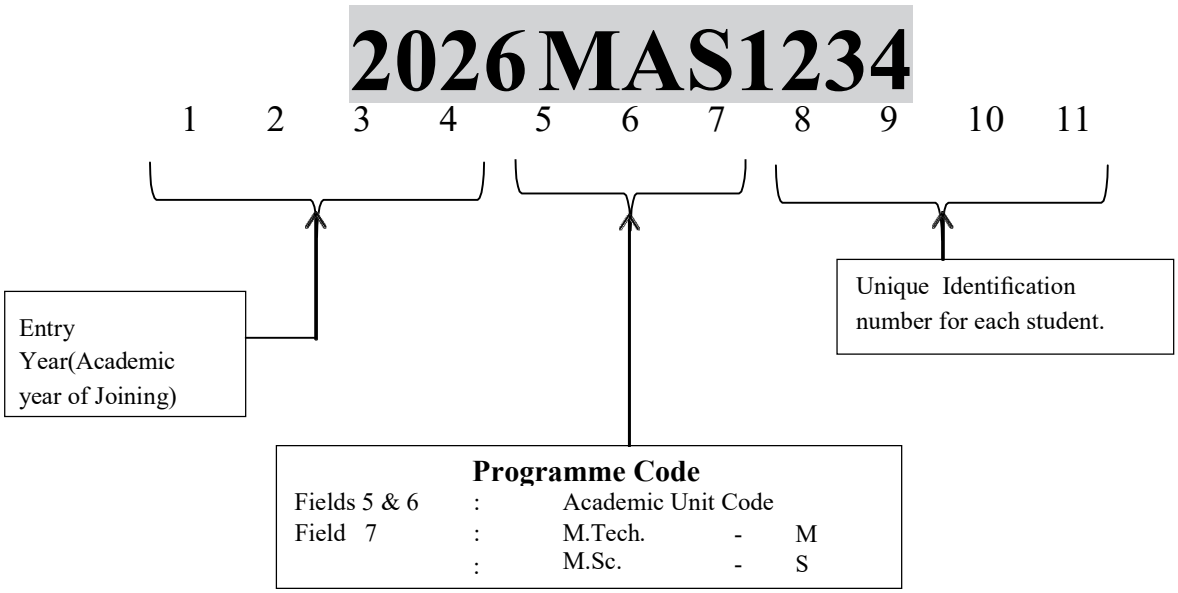
The following Postgraduate Programmes are offered

Sr.No.	**M.Tech. in**
1.	Artificial Intelligence
2.	Biomedical Engineering
3.	Chemical Engineering
4.	Civil Engineering with the following specializations in i. Water Resources and Environment ii. Structural Engineering and Geo-mechanics
5.	Computer Science & Engineering
6.	Electrical Engineering with the following specialization in i. Communication & Signal Processing ii. Microelectronics &VLSI Design iii. Power Engineering
7.	Mechanical Engineering with the following specializations in i. Mechanics & Design ii. Manufacturing Engineering iii. Thermal & Fluids Engineering iv. Computational Mechanics
8.	Materials Engineering
9.	Autonomous Systems & Drone Technology
10.	E-Waste Resources Engineering & Management
11.	Defence Technology (for Defence personals only)
Sr. No.	**MS Programme in**
1	MS in Data Science (for IIT Madras BS students only)

Sr. No.	M.Sc. in
1.	Chemistry
2.	Mathematics
3.	Physics
4.	Data Science & Management (Joint degree with IIM Amritsar)
Sr. No.	**PG diploma in**
1.	1-year PG Diploma in Drone Technology
2.	1-year Joint PG Diploma Programme in UAV Operations and Drone Technology with Rajiv Gandhi National Aviation University

1.4 Student's Entry Number

The entry number of a student consists of eleven alpha-numerals.



2 Postgraduate Programmes

2.1 Academic System

The overall academic system for IIT Ropar has been designed to provide a science-based engineering education with a view to producing quality engineer-scientists. The curriculum provides broad based knowledge and simultaneously builds a temper for life-long learning and exploring. The Post graduate programme begins with a set of science and general engineering courses which are reflected in the course plan for the first year. These courses provide a foundation for further discipline-specific courses. The **Medium of Instruction** at IIT Ropar is **English**. The main goals of the postgraduate programmes are to develop scientific and engineering manpower of the highest quality, to cater to the needs of industry, R&D organizations and educational institutions, and to enable students to have awareness and sensitivity to the needs and aspirations of society. The programmes have been structured in such a way that interested students can upgrade to the PhD programme.

The current Academic year begins in July and ends in May of the following year. For the Academic Year 2026-27, the 1st semester starts on **July 23th, 2026.** The detailed schedule of the activities and academic deadlines shall be given in the semester schedule that will be available before the start of the semester.

2.2 Programmes offered and Selection Procedure

The candidates can apply for admission to various PG programmes as given below:-

Sr. No.	Programme	Selection Procedure
1.	M.Sc. in Chemistry M.Sc. in Mathematics M.Sc. in Physics	To apply for admission to a desired programme, a candidate is required to qualify JAM (Joint Admission Test for M.Sc.) and also satisfy the Minimum Educational Qualifications (MEQs) and Eligibility Requirements (ERs) of the respective academic programme. For further information, candidates can visit the JAM website.
2.	M.Sc. in Data Science & Management (Joint-degree offered by IIT Ropar – IIM, Amritsar)	To apply for admission in this programme, a candidate is required to apply online at IIM Amritsar Website www.iimamritsar.ac.inand satisfy the Minimum Educational Qualifications (MEQs) and Eligibility Requirements (ERs). For further information, please visit: www.iitrpr.ac.inand https://iimamritsar.ac.in/p/msdsm-
3.	i. M.Tech. in Artificial Intelligence ii. M.Tech. in Biomedical Engineering iii. M.Tech. in Chemical Engineering iv. M.Tech. in Civil Engineering *Specialization in Water Resources and Environment. *Specialization in Structural Engineering and Geo-mechanics v. M.Tech. in Computer Science & Engineering.	To apply for admission in this programme the candidates are required to apply online to IIT Ropar and also satisfy the Minimum Educational Qualifications (MEQs) and Eligibility Requirements (ERs). Admission to M.Tech. programme is done through COAP (Common Offer Acceptance Portal).

	vi. M.Tech. in Electrical Engineering *Specialization in Communication & Signal Processing *Specialization in Microelectronics & VLSI Design *Specialization in Power Engineering vii. M.Tech. in Mechanical Engineering *Specialization in Mechanics & Design *Specialization in Manufacturing Engineering. *Specialization in Thermal & Fluids Engineering. * Specialization in Computational Mechanics viii. M.Tech in Materials Engineering ix. M.Tech. in Autonomous Systems & Drone Technology x. M.Tech. in E-Waste Resources Engineering & Management. xi. M.Tech. in Defence Technology	For further information, please visit: www.iitrpr.ac.in The M.Tech. in Defence Technology programme is exclusively for Indian Army Officers as per the MoU signed with Army Training Command, Shimla. The selection of candidates is also at the end of Army following Army norms.
4.	MS Data Science	To apply for admission in this programme, the candidate should complete BS Degree from IIT Madras with a minimum CGPA of 8.0. The duration of MS Program is 1 Year.
5.	i. PG Diploma in Drone Technology. ii. PG Diploma programme in UAV Operations and Drone Technology with Rajiv Gandhi National Aviation University.	To apply for admission in this programme the candidates are required to apply online to IIT Ropar and also satisfy the Minimum Educational Qualifications (MEQs) and Eligibility Requirements (ERs).

2.3 Admission of International Students

The admission of International students to Post graduate programme will take place twice a year, i.e. in January and July.

2.4 Credit System [For M.Sc. (Physics, Chemistry & Maths) and M.Tech.]

2.4.1 Credit System

Education at the Institute is organized around the semester-based credit system. The prominent features of credit system are a process of continuous evaluation of a student's performance/progress

and the flexibility to allow a student to progress at an optimum pace suited to his/her ability or convenience. This feature is subject to the fulfillment of the minimum requirements for continuation.

A student's performance/progress is measured by the number of credits that he/she has earned, i.e., completed with a pass grade. Based on the course credits and grade obtained by the student, the grade point average is calculated. A minimum grade point average is required to be maintained for satisfactory progress and continuation in the programme.

All Programmes are defined by the total credit requirement and a pattern of credit distribution over courses of different categories. Details are given below.

a) Course Credits Assignment

Each course, except a few special courses, has a certain number of credits assigned to it depending upon its lecture, tutorial and practical contact hours in a week. This weighting also indicates the academic expectation that includes in-class contact and self-study beyond class hours. A few courses are without credit and are referred to as non-credit (NC) courses.

L = No. of lecture 'hours' (actually 50 min.) per week, T = No. of tutorial 'hours' = L/3, by default. P = No. of laboratory 'hours'.

S = Total preparation 'hours' by students including assignments and self-study, S=2L+P/2-T. C = Total credit-terms, C=L+P/2.

Lectures and Tutorials: One lecture or tutorial hour per week per semester is assigned one credit. Practical/Laboratory: One laboratory hour per week per semester is assigned half credit. For each lecture or tutorial credit, the self study component is 1 hour/week.

b) Earning Credits

At the end of every course, a letter grade is awarded in each course for which a student had registered. On obtaining a pass grade, the student accumulates the course credits as earned credits. A student's performance is measured by the number of credits that he/she has earned and by the weighted grade point average.

c) Course Coordinator

Every course is usually coordinated by a member of the teaching staff of the Department which is offering the course in a given semester. This faculty member is designated as the Course Coordinator. He/she has the full responsibility for conducting the course, coordinating the work of the other members of the faculty as well as teaching assistants involved in that course, holding the tests and assignments, and awarding the grades. For any difficulty related to a course, the student is expected to approach the respective course coordinator for advice and clarification. The distribution of the weight for tests, quizzes, assignments, laboratory work, workshop and drawing assignment, term paper, etc. that will be the basis for award of the grade in a course will be decided by the course coordinator of that course and generally announced at the start of the semester.

2.4.2 Grading System

The grading reflects a student's own proficiency in the course. While the relative standing of the student is clearly indicated by his/her grades, the process of awarding grades is not necessarily based

upon evaluating the performance of the class based on some statistical distribution. The course coordinator and the associated faculty for a course formulate appropriate procedures to award grades that are reflective of the student's performance vis-a-vis the instructor's expectation. The credit system enables continuous evaluation of a student's performance and allows the students to progress at an optimum pace suited to individual ability and convenience. This is subject to the fulfilling of the minimum requirements for continuation.

The grades and their description, along with equivalent numerical points wherever applicable are listed below:

Table 1: Grades with their description

Grade	Grade Points	Description
A	10	Outstanding
A (-)	9	Excellent
B	8	Very Good
B (-)	7	Good
C	6	Average
C (-)	5	Below Average
D	4	Marginal
E	2	Poor
F	0	Very Poor
NP	-	Audit Pass
NF	-	Audit Fail
S	-	Satisfactory
U	-	Unsatisfactory
I	-	Incomplete
W	-	Withdrawal

2.4.3 Description of Grades

A Grade: The 'A' grade stands for outstanding achievement. The minimum percentage for the award of an 'A' grade is 80%. However, individual course coordinators may set a higher performance requirement.

B Grade: The 'B' grade refers to very good/good performance.

C Grade: The 'C' grade stands for average performance. This average performance refers to "average" as per instructor's expectations in a holistic sense and not on the average marks.

D Grade: The 'D' grade stands for marginal performance, i.e., it is the minimum pass grade in any course. The minimum percentage for the award of 'D' grade is 30%, however, individual course coordinators may set a higher marks requirement.

E and F Grades: The 'E' and 'F' grades denote poor and very poor performance, and indicate failing a course. An 'F' grade is also awarded in case of poor attendance (see Attendance Rules). A student has to repeat all the core courses in which he/she obtains either an 'E' or an 'F' grade, until a pass grade is obtained. In case of the elective courses in which either an 'E' or an 'F' grade has been obtained the student may take the same course or any other course from the same category. An 'E' grade in a course makes a student eligible to repeat the course in the summer semester, if the course is offered. Further, 'E' and 'F' grades secured in any course stay permanently on the grade card. These grades are not counted in the calculation of the CGPA; however, these are counted in the calculation of the SGPA.

NP and NF Grades: The 'NP' Grade denotes completion of the Audit course. The NF grade denotes Audit fail. These grades are awarded in a course that the student opts to audit. Only an elective course can be audited until one week after the mid semester examination. The Audit Pass (NP) is awarded if the student's attendance is above 75% in the class and he/she has obtained at least a 'D' grade. The Course Coordinator can specify a higher criterion for audit pass at the beginning of the semester. If either of these requirements is not fulfilled, an audit fail (NF) is awarded.

The grades obtained in an audit course are not considered for the calculation of SGPA or CGPA.

S Grade: The 'S' grade denotes satisfactory performance and completion of a course.

UGrade: The 'U' grade denotes unsatisfactory performance in the course.

I Grade: The 'I' grade denotes incomplete performance in any L (Lecture), P (Practical), V (Special Module) category courses. It may be awarded in case of absence on medical grounds or other special circumstances, before or during the major examination period. The student should complete all requirements within 10 days of the last date of the Major Tests; the request is to be made to the Head of the Department of the student's programme who will notify the same to the concerned course coordinators, OR with the permission of the Dean (Academics) the period can be extended to the first week of the next semester. Upon completion of all course requirements, the 'I' grade is converted to a regular grade (A to F, S, U, NP or NF). The 'I' grade does not appear permanently in the grade card. Requests for an I- grade should be made at the earliest but not later than the last day of the major tests.

For (ii), the request is to be made to the Dean (Academics). A student may be considered for the award of an 'I' grade in a course only if the attendance in the course is 75%. Attendance in the course for which an I-grade is being sought will be certified by the course coordinator of the course. If M.Tech. project is incomplete beyond the last date of grade submission, then 'I' grade can be awarded, which can be converted to a letter grade before the late registration date of subsequent semester. If the 'I' grade is not converted by the late registration date, then the student shall register by paying the requisite fees in that semester and complete their project requirements.

W grade: The 'W' grade is awarded in a course where the student has opted to withdraw from the course. Withdrawal from a course is permitted until one week after the Mid Semester Examination. The W grade stays on the grade card.

2.4.4 Evaluation of Performance

The performance of a student will be evaluated in terms of two indices, viz. the Semester Grade Point Average (SGPA) which is the Grade Point Average for a semester, and Cumulative Grade Point Average (CGPA) which is the Grade Point Average for all the completed semesters at any point in time.

The Earned Credits (E.C.) are defined as the sum of course credits of courses in which students have been awarded grades between A to D; for PG students, credits from courses in which an NP or an S grade has been obtained are also added.

Points earned in a course= (Course credits × Grade Point) for courses in which A-F grade has been obtained.

The SGPA is calculated on the basis of grades obtained in all courses registered for in the particular semester, except the audit courses and the courses in which an S grade has been awarded.

$$\text{SGPA}=\frac{\text{Points secured in the semester}}{\text{Credits registered in the semester, excluding audit grade courses}}$$

The CGPA is calculated on the basis of all pass grades, obtained in all completed semesters.

$$\text{CGPA}=\frac{\text{Cumulative points secured in all passed courses(A-D)}}{\text{Cumulative earned credits, excluding audit grade courses}}$$

An example of these calculations is given below:

Table2(a).Typical academic performance calculations-Semester-I

Course No.	Course Credits	Grade Awarded	Earned Credits	Grade Points	Points Secured
(Column1)	(Column2)	(Column3)	(Column4)	(Column5)	(Column6)
MAXXX	5	C	5	6	30
CYXXX	4	C(-)	4	5	20
PHXXX	4	A	4	10	40
PHXXX	2	B	2	8	16
MEXXX	4	E	0	2	08
TTXXX	2	NP	2	–	–

Credits Registered in the semester (total of column2) =21

Credits Registered in the semester excluding Audit Grade course=19

Earned Credits in the semester (total of column4) =17

Earned Credits in the semester=15

Points secured in this semester (total of column6) =114

Points secured in this semester in all passed courses (Total of column6 & A–D Grade) =106

$$\text{SGPA}=\frac{\text{Points secured in the semester}}{\text{Credits registered in the semester, excluding audit grade course}}\quad \frac{114}{19}=6.000$$

$$\text{CGPA} = \frac{\text{Cumulative points secured in all passed courses (A-D)}}{\text{Cumulative earned credits, excluding audit grade course}} \quad \frac{106}{15}$$

Semester Performance:	Earned Credits(E.C.)	=17	SGPA=6.000
Cumulative Performance:	Earned Credits(E.C.)	=17	CGPA=7.067

Table2(b).Typical academic performance calculations-

Semester-II

Course no.	Course credits	Grade awarded	Earned credits	Grade Points	Points secured
(column1)	**(column2)**	**(column3)**	**(column4)**	**(column5)**	**(column6)**
MAXXX	5	B	5	8	40
EEXXX	4	A(-)	4	9	36
CYXXX	4	W	—	—	—
CYXXX	2	B(-)	2	7	14
MEXXX	4	C	4	6	24
AMXXX	4	A	4	10	40
HUXXX	1	NP	1	—	—

Credits Registered in the semester (total of column2)= 24

Credits Registered in the semester excluding Audit Grade courses=23

Earned Credits in the semester (total of column 4)= 20

Earned Credits in the semester excluding Audit Grade Courses =19

Points Secured in this semester (total of column 6)= 154

Points secured in this semester in all passed courses (Total of column 6 & A-D grade) =154

Cumulative points earned in all passed courses=106(Past Semesters)+154(Current Semester) =260

$$\text{SGPA} = \frac{\text{Points secured in the semester}}{\text{Credits registered in the semester, excluding Audit grade course}} \quad \frac{154}{19} = 8.105$$

$$\text{CGPA} = \frac{\text{Cumulative points secured in all passed courses (A-D)}}{\text{Cumulative earned credits, excluding audit grade course}} \quad \frac{106+154}{15+19} = 7.647$$

Cumulative earned credits=	17 (past semester(s)) +	20 (this semester)= 37
Semester Performance:	Earned credits(E.C.) =	20 SGPA=8.105
Cumulative Performance:	Earned credits(E.C)=	37 CGPA=7.647

2.4.5 Course Numbering Scheme

Every course runs for the full length of the semester. At the beginning of the semester, a student registers for the courses that he/she wants to study and at the end of the semester a grade is awarded. On obtaining a pass grade, the student earns all the credits associated with the course while a fail grade does not get any credit; partial credits are not awarded. Each course is associated with a certain number of credits.

(a) Level of the Course

The first digit of the numeric part of the course code indicates the level of the course as determined by the prerequisite course and/or by the maturity required for registering for the course.

*M.Sc. programme courses will start from 400 level to 700 level.

*M.Tech. Courses will start from 500 level to700 level.

The Department can recommend 400 level courses for PG programme also.

2.5 Registration and Attendance

2.5.1Registration

Registration is a very important procedural part of the academic system. The registration procedure ensures that the student's name is on the roll list of each course that he/she wants to study. No credit is given if the student attends a course for which he/she has not registered. Registration for courses to be taken in a particular semester will be done according to a specified schedule before the end of the previous semester. The student must also take steps to pay his/her dues before the beginning of the semester by a demand draft or by making use of internet banking facility of SBI. Students who do not make payments by a stipulated date will be de-registered for the particular semester. In absentia registration or registration after the specified date will be allowed only in rare cases at the discretion of the Dean (Academics). In case of illness or absence during registration, the student should intimate the same to his/her course advisor and Dean (Academics). A student must meet his/her advisor within the first week of the new semester for the confirmation of his/her registration. The registration record should be preserved until the semester grade card is received. Various activities related to registration are listed below. The relevant dates are included in the Semester Schedule that is available before the start of the semester.

2.5.2 Registration and Student Status

Registration by a student confirms his/her status as a student at the Institute. Failure to register before the last date for late registration will imply that the student has discontinued studies and his/her name

will be struck-off the rolls. Every registered student is considered as a full-time student at the institute. They are expected to be present at the Institute and devote full time to academics.

2.5.3 Advice on Courses

At the time of registration, each student must consult his/her faculty advisor/programme coordinator to finalize the academic programme, keeping in view factors, such as, minimum/maximum numbers of total and lecture credits, past performance, backlog of courses, SGPA/CGPA, pre-requisite, work load and student's interests, amongst others. Special Provisions exist for academically weak students.

2.5.4 Registration Validation

Before the first day of classes, every student is required to be present on campus and validate his/her registration. The updated registration record will be available on the website and the hardcopy will be available with the student's adviser. Students who do not do registration validation will not be permitted to add/drop courses.

2.5.5 Late Registration

Late registration is permitted under the following conditions:

A student, who was not on campus during the period of registration in the previous semester, needs to complete the registration process on or before the first day of the semester before the commencement of classes.

OR

For reasons beyond his/her control, if a student is not able to register or send an authorized representative with a medical certificate, he/she may apply to the Dean (Academics) for late registration. Dean (Academics) may consider and approve late registration in genuine cases on payment of an extra fee called late registration fee. Late registration is permitted until one week after the start of the semester or as notified in the Academic Calendar.

2.5.5.1 LATE REGISTRATION FINE

(Assuming Registration day on 0th day)

- Late registration fees from 1st to 2nd day after registration date: Rs. 1000/-
- Late registration fees from 3rd day to Last day of Late Registration Date: Rs. 2000/-
- Late registration fees after Last Day of Late Registration: Rs. 5000/-
- If late registration is due to medical reasons, the students are required to submit medical certificate duly mentioning the rest needed for recovery, and need to provide fitness certificate. The late registration fine may be waived off on case to case basis, in genuine medical cases only.
- The students who fail to submit the late registration fee by the stipulated date will not be allowed to sit in the mid-semester/end semester examination.

2.5.6 Add, Drop, Audit and Withdrawal from Courses

a. **Add/Drop:** A student has the option to add a course(s) that he/she has not registered for, or drop

a course(s) for which he/she has already registered for. This facility is restricted to the first week of the semester.

b. **Audit:** A student may apply for changing a credit course to an audit one within one week of the end of the mid semester examination. Audit is not allowed in any 1st year course and also for any core course. The credit of the courses which are audited will not be counted in the final degree requirements.

c. **Withdrawal:** A student who wants to withdraw from a course should apply within one week of the end of the mid semester examination. A withdrawal grade (W) will be awarded in such cases. Withdrawal in core course (s) is not allowed.

2.5.7 Semester Withdrawal

If a student is absent for more than 20 teaching days in a semester on medical grounds, he/she may apply for withdrawal for that semester, i.e., withdrawal from all courses registered in that semester. Application for semester withdrawal must be made as early as possible at least before the start of the major tests. Partial withdrawal from the courses registered in a semester is not allowed. In extraordinary circumstances like medical grounds, a student may be permitted by the Dean (Academics) to withdraw from a semester completely. Normally, a student will be permitted to withdraw from the programme only for a maximum continuous period of two semesters. To continue registration to the programme, a student has to pay Registration/Enrolment fees.

2.5.8 Registration and Fees Payment

Every registered student must pay the stipulated fees in full before the specified deadlines. In the event that a student does not make these payments, he/she will be de-registered from all courses and his/her name will be struck-off from the roll list.

2.5.9 Registration Record

In addition to web-based entries related to registration, the student should ensure that the same are entered on the Registration Record. Queries related to registration will be considered only when accompanied by the original Registration Record. This record must be preserved until the semester grade card is received by the student.

2.5.10 Continuous Absence and Registration Status

If a student is absent from the Institute for more than four weeks without notifying the Head of the Department or the Dean (Academics) his/her registration will be terminated and the name will be removed from the Institute rolls.

2.5.11 Attendance Rules

All students must attend every lecture, tutorial and practical class. However, to account for late registration, sickness or other such contingencies, the attendance requirement will be a minimum of 75% of the classes actually held. If a student has less than 75% attendance in a course during the semester, in lectures, tutorials and practical's taken together (as applicable), the course coordinator may award an 'F' grade in

that course irrespective of his/her performance in the tests. For the purpose of attendance calculation, every scheduled lecture, tutorial or practical class will count as one unit irrespective of the number of contact hours.

An M.Tech. student irrespective of the source of assistantship, must attend at least 75% of classes in each course in which he/she is registered. In case his/her attendance falls below 75% in any course during a month, he/ she will not be paid assistantship for that month. Further, if his/ her attendance again falls short of 75% in any course in any subsequent month in that semester, his/her studentship will be terminated. For the above purpose, if 75% works out to be a number is not a whole number; the immediate lower whole number will be treated as the required 75% attendance. Attendance record will be maintained based upon roll calls (or any equivalent operation) in every scheduled lecture, tutorial and practical class. The course coordinator will maintain and consolidate attendance record for the course (lectures, tutorials and practical's together, as applicable)

2.5.12 Leave Rules

A full time M.Tech. student during his/her stay at the Institute will be entitled to leave for 30 days (including leave on medical ground), per academic year. Even during mid-semester breaks, and summer and winter vacations, he/she will have to explicitly apply for leave. The leave will be subject to approval of the Head of Department and a proper leave account of each student shall be maintained by the Department/Centre concerned. The student if found absent, his/her fellowship will be deducted.

The M.Sc. student during his/her stay at the Institute will be entitled to avail summer/winter vacation.

2.6 Rules and Regulations

2.6.1 Absence during the Semester

a) A student must inform the course Instructor/HOD /Supervisor/Academic section immediately of any instance of continuous absence from classes.

b) A student who is absent due to illness or any other emergency, up to a maximum of two weeks, should approach the course coordinator for make-up quizzes, assignments and laboratory work.

c) A student who has been absent from mid semester examination due to illness should approach the course coordinator for a make-up test immediately on return to class. The request should be supported with a medical certificate from institute's medical officer. A certificate from a registered medical practitioner will also be acceptable for a student normally residing off-campus provided registration number of the medical practitioner appears explicitly on the certificate.

d) In case of absence on medical grounds or other special circumstances, before or during the major examination period, the student can apply for I-grade. 75% attendance in a course is necessary for being eligible for an I-grade in that course. An application requesting I-grade should be made at the earliest but not later than the last day of major tests. The application should be made to the Head of the Department of the student's programme who will grant approval depending on the merit of the case and inform the course coordinators and PG section. The student should complete all the course requirements within ten days from the last day of the Major Tests. The I-grade will then be converted to a proper grade (A to F, NP or NF).

e) In special situations arising due to the inability to be present at the institute during the stipulated period, in (d) above, the period for conversion of I grade can be extended to the first week of the next

semester. Approval for this extension can be granted by the Dean (Academics) on recommendations of the concerned Head of the Department and the course coordinators. A request to this effect must be included in the application for I-grade.

f) In case of the period of absence on medical grounds is more than 20 working days during the semester, a student may apply for withdrawal from the semester, i.e., withdrawal from all courses registered that semester. Such application must be made as early as possible and latest before the start of the major tests. No applications for semester withdrawal will be considered after the major tests have commenced. The Dean (Academics) depending on the merit of the case will approve such applications. Partial withdrawal from courses registered in a semester is not allowed.

g) If a student is continuously absent from the institute for more than four weeks without notifying the Dean (Academics)/HOD, his/her name will be removed from institute rolls.

2.6.2 Measures for Helping SC/ST Students

A number of measures exist for helping students belonging to SC and ST categories. A senior faculty member is appointed as advisor to SC/ST students for advising them on academic and non- academic matters. Financial measures for helping SC and ST student are also available.

2.7 Curriculum and Structure of the PG Programmes

2.7.1 Credit Structure

The total earned credit requirements among the various categories for the PG programme among the various categories is given below in Table 1.

Table 1

Category (M.Sc.)	Structure	Credit
M.Sc. in Chemistry	Core Courses Elective Courses Project Work Seminar	54 06 19 1
	Total	80
M.Sc. in Mathematics	Core Courses Elective Courses Open Electives Project Work Seminar (compulsory)	39 12-16 6-8 12 2
	Total	71-77
M.Sc. in Physics	Core Courses Elective Courses Project Work Seminar	53 09 13 3

	Total	78
M.Sc. in Data Science & Management	Core Courses Elective Courses Project Work Final Capstone	46 12 2 6
	Total	66

Category (M.Tech.)	Structure	Credit
M.Tech.in Artificial Intelligence	Project Work Electives Courses Core Courses	30 11 20-22
	Total	61-63
M. Tech. in Biomedical Engineering	Project Work Electives Courses Core Courses	32 06 26
	Total	64
M.Tech.in Chemical Engineering	Project Work Elective Courses Core Courses	30 15/16 18
	Total	63-64
M.Tech.in Civil Engineering **i) (Specialization in Water Resources and Environment)** **ii) (Specialization in Structural Engineering and Geomechanics)**	Project Work Elective Courses Core Courses Seminar	30 12to14 19 2
	Total	63-65
M.Tech. in Computer Science& Engineering	Project Work Elective Courses Core Courses	30 16 14
	Total	60
M.Tech. in Electrical Engineering (Specialization in Communication & Signal Processing)	Project Work Elective Courses Core Courses	30 12 18
	Total	60

M.Tech. in Electrical Engineering (Specialization in Microelectronics and VLSI Design)	Project Work Elective Courses Core Courses	30 15/16 18
	Total	63-64
M.Tech. in Electrical Engineering (Specialization in Power Engineering)	Project Work Elective Courses Core Courses	30 06 24
	Total	60
M.Tech. in Mechanical Engineering ***Specialization in** **i) Mechanics and Design** **ii) Manufacturing Engineering** **iii) Thermal & Fluids Engineering.** **iv) Computational Mechanics**	Core courses credit Specialization Credits Department Elective Credits Open Elective Credits Thesis/Project	12 6 6 6 32
	Total	62
M.Tech. in Materials Engineering	Project Work Elective Courses Core Courses	32 12 20
	Total	64
M.Tech. in Autonomous Systems & Drone Technology	Project Work Elective Courses Core Courses	32 15 15
	Total	62
M.Tech. in E-Waste Resources Engineering & Management.	Project Work Elective Courses Core Courses	30 12-16 19
	Total	61-65
Post-Graduate Diploma in Drone Technology (PGDT)	Capstone Project Work Elective Courses Core Courses	9 9 12
	Total	30
MS Program in Data Science	Project Work	40
	Total	40

2.7.2 Minimum CGPA Required for M.Sc. & M.Tech. Degree

The Minimum CGPA for the award of M.Sc. & M.Tech. degree is 5.0.

2.7.3 Special Requirements

Every student will be required to make presentations in various courses/seminars as per the requirement of curriculum from time to time, and if the department so feels, the student can be asked to take a regular course on this aspect for credit/non-credit. In such cases department may choose letter grades as mentioned in 2.4.2.

2.7.4 Guidelines for Self Study/Independent Mode in Summer Semester

- The courses in which there are less than or equal to 5 students, the courses be floated as self-study/independent courses in the summer semester.
- Only students who are having backlog in the courses be allowed to take the courses in self-study /independent mode.
- The instructor(s) will provide the study material to the students and give assignments, conduct quizzes and examinations. The evaluation will be done in offline mode only as per summer semester Academic Calendar.
- Graduating M.Sc. and M.Tech students are allowed to take only one (1) course as self-study/independent mode in summer semester during the entire program.
- The courses will be offered in the self-study/ independent mode preferably to the graduating students, subject to need of the course, availability of the instructor and approval by the Director.

2.8 Performance Requirements and Monitoring

2.8.1 Maximum Period for Completing Degree Requirements

A student is normally expected to complete the M.Sc. & M.Tech. programme in four semesters. In case students do not complete their project work in four semesters, they are permitted to submit the report in the fifth semester with the prior approval of project guide, HoD and Dean Academics. Under no circumstances should students be permitted to spend more than 5 semesters to complete the course work and 6 semesters for the total programme, including the project work, from the date of admission to the programme.

2.8.2 Guidelines for Project Evaluation

2.8.2.1 Guidelines for M.Sc. Project Evaluation

i) The student shall submit the project report at the completion of project before end semester exam.

ii) Project will be evaluated by Project Assessment Committee (PAC). (PAC consists of Supervisor(s), HoD/Nominee of HoD, Internal Examiner) The evaluation will be based on project report and Seminar+viva-voce on the project.

iii) The student will have to appear before PAC and deliver a seminar of 20-25 minutes duration followed by viva-voce.

iv) The dissertation seminar and viva-voce shall be conducted as scheduled in the academic calendar.

v) The grades shall be assigned on the basis of marks awarded in the following distribution:

Assessment of Project work by the Supervisor	50%
Assessment of (1) Report and (2) Seminar with viva-voce by PAC	50%

2.8.2.2 Guidelines for M.Tech. Project Evaluation

i) The student shall submit the project report at the completion of project before end semester exam.

ii) Project will be evaluated by Project Assessment Committee (PAC). (PAC consists of Supervisor(s), HoD/Nominee of HoD, Internal Examiner) The evaluation will be based on
   a) Project report and
   b) Seminar + viva-voce on the project

iii) The student will have to appear before PAC and deliver a seminar of 20-25 minutes duration followed by viva-voce.

iv) The dissertation seminar and viva-voce shall be conducted as scheduled in the academic calendar.

v) The projects in respect of M.Tech program should be evaluated and grades (A to F) be awarded by the Project Assessment Committee (PAC). The grades shall be assigned on the basis of marks awarded in the following distribution.
   a) Assessment of Project work by the Supervisor : 35%
   b) Assessment of (1) Report and (2) Seminar with viva-voce by PAC : 65%

vi) Credits earned from successful completion of Project part-1 and Project part-2 will be added in the calculation of CGPA based on the Letter grade awarded in the project

2.8.2.2.1 Detailed guidelines with respect to the grades submission deadlines for M.Tech projects and fellowship period:

1. The grade submission portal will be opened twice every semester i.e. the date of submission of normal grades and 10 days before the start of next semester.
2. In case the M.Tech. project is not completed till the last date of submission of grades, the faculty can give 'I' grade to such students which can be converted to letter grades before the last date of late registration for the next semester.
3. If the 'I' grade is not converted by the last date of late registration, the candidate shall register in that semester and complete his/her project requirements.
4. The GATE fellowship will be granted for a period of 24 months or till the completion of the degree requirements (courses/project/viva) of M.Tech. programme, whichever is earlier.

2.8.2.3 Supplementary examination for the students of M. Tech. and M. Sc. who fails in core courses. The detailed guidelines are as follows:-

1. Students who get "E" in a core course are eligible to seek Supplementary Examination in the immediately following semester.
2. A student is eligible for writing only one Supplementary Examination in a course. In case a

student fails in the Supplementary Examination, he/she has to repeat the course in a regular semester, as and when it is offered.

3. The Supplementary Examination will be held on the 1st Saturday/Sunday of the following semester, before the add/drop process ends.
4. The Supplementary Examination shall be scheduled with the mutual convenience of the instructor and the student, with intimation to the Academics Section.
5. Similar to regular examination, copy of supplementary exam question paper shall be sent to the office of Dean Academics.
6. The syllabus for supplementary exam must remain same as per the regular Semester Policy (declared by the Instructor in the respective course in the regular semester).
7. Final grade will be based on marks obtained in PMT plus new marks secured in the supplementary exam not exceeding 'D' grade on the same grading policy as that used in the regular semester.
8. Not more than two supplementary examinations for M.Tech. and three for M.Sc. programme can be written by the student in the entire duration of his/her degree.

2.8.2.4 Guidelines/ Norms for Joint Master Thesis for M. Tech. Students

The student(s) of M.Tech. programme pursuing their Master's Thesis/Project work will have the opportunity to do their Joint Master's Thesis at other Institute/Organization as per following norms:

1. The students are allowed to do Joint Master Thesis/Project work for the period of twelve months at R&D organization/Institutions.
2. The student will be treated as deputed for doing his Joint Master Thesis at the organization where he/she has been deputed by T&P Cell of IIT Ropar.
3. For doing the Project/Thesis work, the student will opt a supervisor at IIT Ropar and one at the organization where he/she is deputed for doing the Project/Thesis work.
4. After Completion of the project student need to submit a detailed project report and defend his thesis in the department.
5. To maintain his registration at the Institute, he/she has to pay the registration fees.
6. The students(s) will abide by the professional and ethical norms of the organization as well as of the Institute.
7. The student will continuously report his/her progress to the Supervisor/Joint Supervisor at IIT Ropar.
8. IPR will be as per IIT Ropar norms.
9. The students are not eligible for HTTA (GATE fellowship) during the period. Concerned department can take a call in this regard.
10. The student is required to complete all the requirements towards award of M.Tech. degree to him/her as per IIT Ropar norms.

11. The proposal to come from the concerned department signing of Non Disclosures agreements can be looked after by the supervisor on case to case basis.

2.8.2.5 Norms for the students leaving for jobs during M.Tech. programme.

1. Student must pay the semester fee upto completion of degree.
2. The M.Tech students may allow converting in Part-time to take up employment.
3. The student must produce the offer letter from the institution/organization which he/she proposes to join.
4. The student has to produce a "No Objection Certificate" from the Head of the institution/organization, which he/she proposes to join.
5. The conversion is allowed only after the completions of course work (one year).
6. The student must complete his/her degree within 4 years counted from the date of his/her first registration in the programme.
7. Provision of conversion from full-time to part-time status can be availed of only once by the student during his/her programme.
8. The status of the student will be reviewed by the supervisor at least once in every semester after the conversion, and his/her continuation on part-time status will be subject to his/her making satisfactory progress towards completing the thesis/project work.
9. The students are not eligible for HTTA (GATE fellowship)during the period.

2.8.2.6 Guidelines for Sponsored (full-time) candidates for admission to M.Tech. Programme at IIT Ropar

A candidate in this category is sponsored by a recognized R&D organization, Academic Institution, Governmental Organization or Industry for doing M.Tech. in the Institute on a full-time basis. A candidate who is sponsored by his/her employer and who meets the conditions specified below may be admitted through a separate selection committee appointed specifically for the purpose.

1. A sponsored candidate must have been in the service of the sponsoring organization for at least two years at the time of his/her admission.
2. The sponsoring organization must specifically undertake to provide full salary to the candidate and to relieve him/her to pursue the programme for its full duration. A certificate to that effect from sponsoring organization must be provided by the candidate at the time of applying for admission.
3. The candidate must be engaged in professional work in the discipline in which admission is sought.
4. Two seats in each discipline/specialization can be reserved for admission to M.Tech. Programme for the candidates from DRDO & Armed Forces, Central Water Commission (CWC), Central Water and Power Research Station (CWPRS), Indian Space Research Organisation (ISRO), National Institute of Hydrology (NIH), Central Ground Water Board (CGWB), National Water Development Agency (NWDA), etc. If the seats remain vacant, then it can be made available for regular

candidates (i.e. candidates from the GATE exam).

Eligibility:

a. As per regular students.
b. Fulfillment of GATE requirement may be waived off for such candidates. However, candidates seeking admission to M.Tech. program who have not qualified GATE need to take written test/interview.
c. IPR: As per Institute norms.
d. Supervision: There shall be a supervisor from the respective Department of IIT Ropar. In addition, an external supervisor from the candidate's institute/agency may be considered for joint supervision.
e. The candidate will not receive any financial support from the Institute.

2.8.2.7 Guidelines of Part-time M.Tech. Program for permanent non-teaching staff at IIT Ropar.

The following are the guidelines for the permanent/ regular IIT Ropar non-teaching staff for pursuing part-time M.Tech. program at IIT Ropar.

1. The permanent employee should have
   I. Completed at least one year of service after confirmation. A staff member who has been promoted should be duly confirmed in the promoted post on or before the date of registration for the M.Tech. programme. However, the requirement of completing one year of service after confirmation may be met by taking into account the employee's continuous past service, as regular permanent employee at least for one year rendered at IIT Ropar, before promotion.

   II. Should have three years of service remaining at the time of application.

   The candidates to this category are selected subject to following additional criteria.
   I. must fulfill the minimum eligibility criteria for admission to M.Tech. programme.
   II. Valid GATE score/NET OR 2-year total experience after confirmation.
   III. performance in Written Test / Interview.

2. The candidate joining the programme are also subjected to following norms:
   I. If a candidate is not continuing at IIT Ropar while pursuing the degree, then he/she may be considered under the 'Self-Financed' category and not under the 'Institute Staff' category.
   II. Remaining criteria will remain same as per M.Tech. norms.

3. There will be no financial support from institute, provided to the candidates getting admission under this category.

4. Maximum 25% of the existing strength in department/ section at a time, will be allowed to join part-time M.Tech. degree programme. The ceiling of 25% of the existing strength of a department/section shall be computed considering only permanent non-teaching staff.
5. NOC will not be issued by the institute for applying job outside, for a period of five (05) years following the completion of the part-time M.Tech. degree.
6. The course work for the staff will run in slow paced manner. The faculty advisor will guide the student accordingly.

2.8.3 Continuation, Probation, fellowship and Termination Guidelines

2.8.3.1 M.Sc. Program continuation, probation, fellowship & termination guidelines.

1. After each semester, if the total earned credits are less than 75% of the registered credits or having SGPA of less than 5.0 then he/she will be placed on probation.
2. Students on probation are allowed to take only 75% of the credits of the required credits in the next semester. Faculty advisor will recommend as to how many credits have to be registered based on the students' previous performance.
3. The registration of any student is limited to 1.25 times of the average earned credits during previous two semesters subject to a minimum of 9 credits and a maximum of 24 credits.
4. On the recommendation of the faculty advisor and the Head of the Department, the students who are on probation will be advised to go for slow paced programme. Maximum duration of the programme is 3 years.

Termination

1. At the end of first year if a student fails to clear minimum of 50% of the credits securing CGPA of less than 5.0 then he/she will be recommended for termination.

2.8.3.2 M.Tech. Program continuation, probation, fellowship & termination guidelines.

1. After each semester, if the total earned credits are less than 75% of the registered credits or having SGPA less than 5.0 then he/she will be placed on probation.
2. Students on probation are allowed to take only 75% of the credits of the required credits in the next semester. Faculty advisor will recommend as to how many credits have to be registered based on the students' previous performance.
3. The registration of any student is limited to 1.25 times of the average earned credits during previous two semesters subject to a minimum of 9 credits and a maximum of 24 credits.
4. Students will not be allowed to register for project till they clear 70% of the course credits.
5. Students on probation will not be entitled to receive fellowships.
6. A minimum SGPA of 5.0 and above is required for continuation of fellowship.
7. The period for which the student was not entitled for the GATE fellowship because he/she was placed on probation, is not entitled to receive the fellowship in the subsequent semester, if he/she fulfils the requirement criteria.
8. Student on probation will not be placed on TA duties.

9. On the recommendation of the faculty advisor and the Head of the Department the students who are on probation will be advised to go for slow paced programme. Maximum duration of the programme is 3 years.
10. The GATE Fellowship will be granted for a period of 24 months or till the completion of the degree requirements whichever is earlier.

Termination

1. At the end of first year if a student fails to clear minimum of 50% of the course credits securing CGPA of less than 5.0 then he/she will be recommended for termination.

2.8.4 Eligibility for the award of M.Sc. & M.Tech. degree

2.8.4.1 Eligibility for award of degree

A student shall be declared to be eligible for the award of M.Sc. degree if he/she has

1. Registered and successfully completed the entire core, elective courses and the project.
2. Successfully acquired the minimum number of credits prescribed in the curriculum of the given stream within the stipulated time.
3. No dues to the Institute, Library and Hostels etc.
4. No disciplinary action pending against him/her.
5. Secured a CGPA of 5.0, considering only the successfully completed courses.

2.8.4.2 Structure of the M.Sc. and M.Tech. Programme

1. The programme of instruction for each stream of specialization will consist of:
   i. Core courses to be compulsorily taken by all the students of the programme.
   ii. Elective courses including domain specialization courses offered (Electives will have to be opted from the courses offered by the Department in the particular quarter from amongst the list of approved courses and may be taken from other department also with the departmental permission.)
   iii. Laboratory courses
   iv. Project work
2. The medium of instruction, examination, seminar and project reports will be in English.

2.8.5 AIMS (ACADEMIC INFORMATION MANAGEMENT SYSTEM)

The name and other details of a new student is entered in the AIMS Portal. All the process regarding registration of courses, Add / Drop, Audit / Withdrawal etc. are required to be done on the Academic Information Management System (AIMS) portal. The information related to courses, credits & grades etc all is available on the AIMS portal. A student must check AIMS portal from time to time for various academic activities. The student can login to AIMS portal through the Institute email ID provided to them. The link of AIMS portal is https://www.iitrpr.ac.in/aims/. Unauthorized accessing the records of other students leads to locking of the login ID and penalty may be imposed.

2.8.6 Programme Structure

I) M.Sc. in Chemistry

Semester–I[Core]

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CY411	Concise Inorganic Chemistry	3-0-0-6-3	3
2	CY412	Concise Organic Chemistry	3-0-0-6-3	3
3	CY414/CY415	An Introduction to Biochemistry/ Numerical Methods for Chemists	3-0-0-6-3	3
4	CY416	Reaction Rates and Chemical Thermodynamics	3-0-0-6-3	3
5	CY417	Quantum Chemistry and Group Theory	3-0-0-6-3	3
6	CY401	Practical–1	0-0-6-3-3	3
7	CY402	Practical–2	0-0-6-3-3	3
				Total 21

Students can choose any one course listed at serial no. 03

Semester–II [Core]

S. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CY421	Advanced Organic Chemistry	3-0-0-6-3	3
2	CY422	Coordination Chemistry	3-0-0-6-3	3
3	CY423	Solid-State Chemistry	3-0-0-6-3	3
4	CY424	Electrochemistry and Statistical Thermodynamics	3-0-0-6-3	3
5	CY427	Interpretative Molecular Spectroscopy	3-0-0-6-3	3
6	CY403	Practical–3	0-0-6-3-3	3
7	CY404	Practical–4	0-0-6-3-3	3
			Total	**21**

Semester–III [Core]

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CY511	Instrumentation Analysis	3-0-0-6-3	3
2	CY513	Polymer Chemistry	3-0-0-6-3	3
3	CY514	Environmental Chemistry	3-0-0-6-3	3
4	CY515	Bioorganic Chemistry	3-0-0-6-3	3
5	CY699	Project–I	0-0-14-7-7	7
				Total 19

Project- I will include submission of dissertation and presentation.

Semester–IV[Core and Electives]

Sr. No.	Course Code	Title	L-T-P-S-C	Credits
Core				
1	CY500	Seminar	-	1
2	CY799	Project–II	0-0-24-12-12	12
Elective				
3	CY---	Elective–1	3-0-0-6-3	3
4	CY---	Elective–2	3-0-0-6-3	3

Project - II will include submission of dissertation and presentation.

Elective courses including open electives (minimum 6 credits)

Structure	Number of Credits
Core	54
Elective Courses	06
Project Work	19
Seminar	1
Total	**80**

List of Core Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CY411	Concise Inorganic Chemistry	3-0-0-6-3	3
2	CY412	Concise Organic Chemistry	3-0-0-6-3	3
3	CY414 CY415	An Introduction to Biochemistry/ Numerical Methods for Chemists	3-0-0-6-3	3
4	CY416	Reaction Rates and Chemical Thermodynamics	3-0-0-6-3	3
5	CY417	Quantum Chemistry and Group Theory	3-0-0-6-3	3
6	CY401	Practical–1	0-0-6-3-3	3
7	CY402	Practical–2	0-0-6-3-3	3
8	CY421	Advanced Organic Chemistry	3-0-0-6-3	3
9	CY422	Coordination Chemistry	3-0-0-6-3	3
10	CY423	Solid-State Chemistry	3-0-0-6-3	3
11	CY424	Electrochemistry and Statistical Thermodynamics	3-0-0-6-3	3
12	CY427	Interpretative Molecular Spectroscopy	3-0-0-6-3	3
13	CY403	Practical–3	0-0-6-3-3	3

14	CY404	Practical–4	0-0-6-3-3	3
15	CY511	Instrumentation Analysis	3-0-0-6-3	3
16	CY513	Polymer Chemistry	3-0-0-6-3	3
17	CY514	Environmental Chemistry	3-0-0-6-3	3
18	CY515	Bioorganic Chemistry	3-0-0-6-3	3
19	CY699	Project–I	0-0-14-7-7	7
20	CY500	Seminar	-	1
21	CY799	Project–II	0-0-24-12-12	12

List of Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CY601	Principles of physical Chemistry	3-0-0-6-3	3
2	CY602	Concepts of Organic Chemistry	3-0-0-6-3	3
3	CY604	Electronic Structure Calculations	2-0-2-5-3	3
4	CY605	Quantum Molecular Reaction Dynamics	3-0-0-6-3	3
5	CY611	Advances in Catalysis	3-0-0-6-3	3
6	CY612	Molecular Recognition	3-0-0-6-3	3
7	CY613	The Chemistry of Metal Carbon Bond	3-0-0-6-3	3
8	CY614	Principles of Biochemistry	3-0-0-6-3	3
9	CY615	Introduction to Non-Equilibrium Statistical Mechanics	3-0-0-6-3	3
10	CY616	Principles of Molecular Simulations	3-0-0-6-3	3
11	CY621	Advanced Quantum Chemistry	3-0-0-6-3	3
12	CY622	Applied Electrochemistry	3-0-0-6-3	3
13	CY623	Heterogeneous Catalysis and Interfacial Phenomena	3-0-0-6-3	3
14	CY624	Chemistry of Natural Products	3-0-0-6-3	3
15	CY625	Inorganic Materials Chemistry	3-0-0-6-3	3
16	CY626	Synthetic Organic Chemistry	3-0-0-6-3	3
17	CY627	Principles of Nuclear Magnetic Resonance Spectroscopy	3-0-0-6-3	3
18	CY701	Molecular Spectroscopy	3-0-0-6-3	3
19	CY702	Chemistry of Novel Heterogeneous Catalytic Materials	3-0-0-6-3	3
20	CY703	Strategies in Supramolecular Chemistry	3-0-0-6-3	3
21	CY704	Chemical Synthetic Strategy of Organic	3-0-0-6-3	3

		Reactions		
22	CY705	Bioconjugates: Techniques and Applications	3-0-0-6-3	3
23	CY706	Advances in Ab Initio Methods	3-0-0-6-3	3
24	CY707	Non-adiabatic Effects in Chemical Dynamics	3-0-0-6-3	3

M. Sc. in Mathematics

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MA411	Real Analysis	3-1-0-5-3	3
2	MA412	Linear Algebra	3-1-0-5-3	3
3	MA413	Computer Programming (C/C++/Python)	3-1-2-8-4	4
4	MA414	Ordinary Differential Equation	3-1-0-5-3	3
5	MA415	Algebra	3-1-0-5-3	3
6	MA500	Seminar	0-0-4-2-2	2

Total 18

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MA421	Complex Analysis	3-1-0-5-3	3
2	MA422	Partial Differential Equation	3-1-0-5-3	3
3	MA424	Numerical Analysis	3-1-2-8-4	4
4	MA425	Topology	3-1-0-5-3	3
5	MA427	Probability & Statistics	3-1-0-5-3	3
6	MA---	*Flexible Departmental Elective (Sem II/III/IV)	---	3 or 4

Total **16-20**

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MA511	Functional Analysis	3-1-0-5-3	3
2	MA512	Optimization Techniques	3-1-2-8-4	4
3	MA---	*Flexible Departmental Elective (Sem II/III/IV)	---	3 or 4
4	MA—	Department Elective – II	---	3 or 4
5	—	Open Elective – I	---	3 or 4
6	MA530	Project – I	0-0-8-4-4	4

Total 20-23

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MA---	*Flexible Departmental Elective (Sem II/III/IV)	---	3 or 4
2	MA—	Department Elective – III	---	3 or 4
3	MA—	Department Elective – IV	---	3 or 4
4	MA—	Open Elective – II	---	3
5	MA540	Project – II	0-0-16-8-8	8
			Total	**17-24**

~~Out of total electives maximum 6 or 8 credits, students can opt from open electives.~~

- The Project-I and Project-II are compulsory for all the students of M.Sc. Mathematics without any CGPA criteria.

*** The Flexible Departmental Elective (Sem II/III/IV) course can be taken by a student only once, either in either the 2nd or 3rd or 4th semester.**

List of Core Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MA411	Real Analysis	3-1-0-5-3	3
2	MA412	Linear Algebra	3-1-0-5-3	3
3	MA413	Computer Programming	3-0-2-7-4	4
4	MA414	Ordinary Differential Equation	3-1-0-5-3	3
5	MA415	Algebra	3-1-0-5-3	3
6	MA421	Complex Analysis	3-1-0-5-3	3
7	MA422	Partial Differential Equation	3-1-0-5-3	3
8	MA423	Stochastic Processes	3-1-0-5-3	3
9	MA424	Numerical Analysis	3-0-2-7-4	4
10	MA425	Topology	3-1-0-5-3	3
11	MA511	Functional Analysis	3-1-0-5-3	3
12	MA512	Mathematical Methods	3-1-0-5-3	3
13	MA513	Optimization Techniques	3-1-0-5-3	3

List of Elective Courses

Sr. No.	Course Code	Course Title	L-T-P-S-C	Credits
1.	MA 426	Theory of Computation	3-0-0-6-3	3
2.	MA514	Analysis and Design of Algorithms	3-1-0-5-3	3
3.	MA515	Foundations of Data science	3-0-2-7-4	4

4.	MA 608	Operator theory	3-1-0-5-3	3
5.	MA 609	Basic Algebraic number Theory	3-0-0-6-3	3
6.	MA612	Modular Forms	3-0-0-6-3	3
7.	MA 614	Applied Linear Algebra and Matrix Analysis	3-1-2-6-4	4
8.	MA 620	Discrete Mathematics	3-1-0-5-3	3
9.	MA 621	Introduction to Calculus of Variations	3-0-0-6-3	3
10.	MA 623	Introduction to Knot Theory	3-0-0-6-3	3
11.	MA 624	Basics in Coding Theory and Cryptography	3-0-0-6-3	3
12.	MA 625	Calculus of variations and integral Equations	3-0-0-6-3	3
13.	MA 626	Problem Solving in Mathematics	1-0-4-4-3	3
14.	MA 629	Fuzzy logic and Application	3-0-0-6-3	3
15.	MA630	Introduction to Applied Statistical Methods	3-1-0-5-3	3
16.	MA709	Basic Algebraic Number Theory	3-0-0-6-3	3
17.	MA717	Advanced Partial Differential Equations	3-0-0-6-3	3
18.	MA615	Elementary Number Theory	3-0-0-6-3	3
19.	MA718	Evolutionary Game Theory	3-0-0-6-3	3
20.	MA516	Mathematical Image Processing	3-1-0-5-3	3
21.	MA517	Distributed Algorithms	3-0-0-6-3	3

iii) M. Sc. in Physics

Semester –I

Sr. No.	Course Code	Course Title	L-T-P-S-C	Credits
1	PH411	Classical Mechanics	3-1-0-5-3	3
2	PH412	Mathematical Physics	3-1-0-5-3	3
3	PH413	Quantum Mechanics-I	3-1-0-5-3	3
4	PH414	Electromagnetic Theory	3-1-0-5-3	3
5	PH415	Electronics	3-1-0-5-3	3
6	PH410	Electronics Lab	0-0-6-3-3	3
				Total 18

Semester –II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	PH421	Quantum Mechanics-II	3-1-0-5-3	3
2	PH422	Experimental Methods	3-1-2-6-4	4
3	PH423	Atomic and Molecular Physics	3-1-0-5-3	3

4	PH424	Nuclear and Particle Physics	3-1-0-5-3	3
5	PH425	Condensed Matter Physics	3-1-0-5-3	3
6	PH420	Physics Lab-I	0-0-8-4-4	4

Total 20

Physics Lab-I: Experiments related to Solid State Physics, Modern Physics, and Nuclear Physics

Semester - III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	PH511	Modern Optics	3-1-0-5-3	3
2	PH512	Statistical Mechanics	3-1-0-5-3	3
3	PH513	Numerical Methods &Programming	2-0-6-7-5	5
4	PH5--/PH6–	Elective – I	3-0-0-6-3	3
5	PH510	Physics Lab-II	0-0-8-4-4	4
6	PH699	Project – I	0-0-6-3-3	3

Total 21

PhysicsLab-II: Experiments related to Optics, Electromagnetism, and Spectroscopy.

Semester - IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	PH5--/PH6–	Elective - II	3-0-0-6-3	3
2	PH5--/PH6–	Elective - III	3-0-0-6-3	3
3	PH799	Project – II	0-0-20-10-10	10
4	PH500	Seminar + Viva Voce	0-0-6-3-3	3

Total 19

***Total Credits-**M.Sc. in Physics:78

List of core courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	PH411	Classical Mechanics	3-1-0-5-3	3
2	PH412	Mathematical Physics	3-1-0-5-3	3
3	PH413	Quantum Mechanics-I	3-1-0-5-3	3
4	PH414	Electromagnetic Theory	3-1-0-5-3	3
5	PH415	Electronics	3-1-0-5-3	3
6	PH410	Electronics Lab	0-0-6-3-3	3
7	PH421	Quantum Mechanics-II	3-1-0-5-3	3
8	PH422	Experimental Methods	3-1-2-6-4	4

9	PH423	Atomic and Molecular Physic	3-1-0-5-3	3
10	PH424	Nuclear and Particle Physics	3-1-0-5-3	3
11	PH425	Condensed Matter Physics	3-1-0-5-3	3
12	PH420	Physics Lab-I	0-0-8-4-4	4
13	PH511	Modern Optics	3-1-0-5-3	3
14	PH512	Statistical Mechanics	3-1-0-5-3	3
15	PH513	Numerical Methods and Programming	2-0-6-7-5	5
16	PH510	Physics Lab-II	0-0-8-4-4	4
17	PH699	Project-I	0-0-6-3-3	3
18	PH799	Project-II	0-0-20 -10 -10	10
19	PH500	Seminar + Viva Voce	0-0-6-3-3	3

List of Elective Courses

Sr. No.	Course No.	Course Title	LTPSC	Credits
1.	PH551	Nano-optics	3-0-0-6-3	3
2.	PH552	Physics and application of Nano-materials	3-0-0-6-3	3
3.	PH553	Surface and Interfacial Forces	3-0-0-6-3	3
4.	PH554	Nonlinear Optics	3-0-0-6-3	3
5.	PH555	Nuclear Reactions & Instability	3-0-0-6-3	3
6.	PH556	Particle & Radiation Detectors	3-0-0-6-3	3
7.	PH557	Data Reduction and Measurement Techniques	3-0-0-6-3	3
8.	PH558	Nuclear Scattering & Heavy Ion Reactions	3-0-0-6-3	3
9.	PH559	Physics of Low dimensional System	3-0-0-6-3	3
10.	PH560	Semiconductor Physics	3-0-0-6-3	3
11.	PH561	Path Integral in Quantum Mechanics	3-0-0-6-3	3
12.	PH562	Introduction to Quantum Computation and Communication	3-0-0-6-3	3
13.	PH563	Quantum Optics I	3-0-0-6-3	3
14.	PH565	Fundamentals of Quantum Optics	3-0-0-6-3	3
15.	PH566	Foundations of Quantum Theory	3-0-0-6-3	3
16.	PH567	Devices for quantum technology	3-0-0-6-3	3
17.	PH568	Introduction to Many Body Quantum Physics	3-0-0-6-3	3
18.	PH570	Computational Photonics: Fundamentals and Applications	3-0-0-6-3	3
19.	PH571	Electronic Structure of Materials	3-0-2-7-4	4

20.	PH610	Quantum Optics II	3-0-0-6-3	3
21.	PH612	Thin Films Science and Technology	3-0-0-6-3	3
22.	PH614	Laser Physics	3-0-0-6-3	3
23.	PH615	Introduction to Quantum Information	3-0-0-6-3	3
24.	PH617	Ion Beam Fundamentals and Patterning	3-0-0-6-3	3
25.	PH618	Linear and Nonlinear Laser Spectroscopy	3-0-0-6-3	3
26.	PH619	Particle Physics	3-0-0-6-3	3
27.	PH620	Nuclear Models	3-0-0-6-3	3
28.	PH621	Superconductivity and Magnetism	3-0-0-6-3	3
29.	PH622	Basics of General Relativity and Cosmology	3-0-0-6-3	3
30.	PH623	Quantum Field Theory I	3-0-0-6-3	3

iv) MS PROGRAMME IN DATA SCIENCE COURSES

SEMESTER -I				
Sr. No	**COURSE NO.**	**COURSE TITLE**	**LTPSC**	**CREDITS**
1	AI599A	Project - I	0-0-40-20-20	20

SEMESTER -II				
Sr. No	**COURSE NO.**	**COURSE TITLE**	**LTPSC**	**CREDITS**
1	AI599B	Project - II	0-0-40-20-20	20

M.Tech. Programme Courses

i) M.Tech. in Artificial Intelligence

Semester - I

Sr. No.	Course No.	Course Title	LTPSC	Credits
1	CS506	Data Structures and Algorithms	3-1-2-6-4	4
2	CS526	Mathematics for Computer Science	3-1-0-5-3	3
3	CS527	Computer System	3-0-2-7-4	4
4	CS509	PG Software Lab	0-0-6-6-3	3
5	------	Elective I	---	3 or 4

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits

1	CS---	AI Program coreI	------	3or4
2	CS---	AI Program coreII	------	3or4
3	CS---	ElectiveII	------	3or4
4	CS---	ElectiveIII	------	3
5	------	ElectiveIV(CS/Open elective)	------	3or4
6	CS500	PG Seminar in Computer Science	------	0(S/U)

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS551	Colloquium series (approximately) 1 hr/week	----	0 (S/U)
2	CS699	Project –I	0-0-28-14-14	14

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS555	PG Seminar-2 (Topics specific to one's research project)	-----	0(S/U)
2	CS799	Project-II	0-0-32-16-16	16

Appendix A. List of AI Program Core (at least 2 courses from this list)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS503	Machine learning	3-0-2-7-4	4
2	CS512	Artificial Intelligence	3-0-2-7-4	4
3	CS521	Fundamental of Data Science	2-0-2-5-3	3
4	CS524	Data Mining	3-0-0-6-3	3
5	CS504	Artificial Neural Networks (Deep Learning)	3-0-0-6-3	3

- **In general, as new courses are designed and floated, this list would adapt with time.**

Appendix B. List of AI Program Electives (at least 3 other courses from this list)

Sr. No.	Course No	Course Title	L-T-P-S-C	Credits
1	CS501	Computational Complexity	3-0-0-6-3	3
2	CS503	Machine Learning	3-0-2-7-4	4
3	CS504	Artificial Neural Networks	3-0-0-6-3	3
4	CS507	Multimedia Systems	2-0-2-5-3	3
5	CS512	Artificial Intelligence	3-0-2-7-4	4

6	CS515	Computer Graphics	3-0-0-6-3	3
7	CS517	Digital Image Processing and Analysis	2-1-2-4-3	3
8	CS518	Computer Vision	2-0-2-5-3	3
9	CS521	Fundamentals of Data Sciences	2-0-2-5-3	3
10	CS522	Social Computing and Networks	2-0-2-5-3	3
11	CS524	Data Mining	3-0-0-6-3	3
12	CS530	Multi Agent Systems	2-0-2-5-3	3
13	CS532	Security Analytics	2-0-2-5-3	3
14	CS533	Reinforcement Learning	2-0-2-5-3	3
15	CS535	Introduction To Game Theory And Mechanism Design	3-1-0-5-3	3
16	CS539	Internet of Things	3-0-0-6-3	3
17	CS541	Security Aware Architecture	3-0-0-6-3	3
18	CS545	Computer Graphics Lab	0-0-2-1-1	1
19	CS558	Cyber security Essentials	2-0-2-5-3	3
20	CS559	Advanced Cyber security Lab	0-0-4-2-2	2
21	CS560	Optimization For Machine Learning	3-0-0-6-3	3
22	CS609	Network Science	3-0-2-7-4	4
23	CS612	Advanced Machine Learning	2-0-2-5-3	3
24	CS615	Biomedical Image Processing & Analysis	2-0-2-5-3	3
25	CS616	Advanced Computer Vision	2-0-2-5-3	3
26	CS617	Affective Computing and Interaction	2-0-2-5-3	3
27	CS620	Introduction to Spatial Computing	3-0-2-7-4	4
28	CS621	Probabilistic Graphical Models	3-0-0-6-3	3
29	CS623	Multimedia Surveillance Systems	2-0-2-5-3	3
30	CS622	Advanced Image Processing	2-0-2-5-3	3
31	CS701	Special Topics in Complex Networks	3-0-2-7-4	4
32	CS702	Special Topics in Social Computing	3-0-2-7-4	4
33	CS720	Advanced Spatial Computing	3-0-0-6-3	3
34	CS724	Advanced Data Mining	2-0-2-5-3	3
35	CS733	Topics in RL	2-0-2-5-3	3

- **In general, as new courses are designed and floated, this list of courses/course credits would adapt with time.**

Please Note:

Overall Structure of the Program

- **Specialization Core**(20-22credits):
  - CSE Core 14 credits + at least 2 courses(6-8credits) from Appendix A (i.e. list of AI program core courses)
- **Elective Course Credits**(11ormorecredits)
  - **Specialization Electives:** At least 3 other courses from Appendix B (i.e. list of AI program electives)
  - **Department/Open Elective:** One additional course i.e. 3/4 additional credits (any PG elective course). Even non-CSE PG course can be considered but with due approval from CSE ACPGR and CSE HoD.

M. Tech. in Biomedical Engineering

Semester - I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	BM601	Fundamentals of Human Physiology	3-0-2-7-4	4
2	BM605	Biomedical Electronics and Communication	3-0-2-7-4	4
3	BM606	Biomaterial and Tissue Interactions	2-0-2-5-3	3
4	-	Weekly seminars (no credit, 1 hour/week)	---	0
5	BM---	Elective – I		3

Total14

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	BM607	Medical Devices and Equipment	3-0-2-7-4	4
2	BM608	Biomechanics	3-0-2-7-4	4
3	BM609	Physics of Medical Imaging	3-0-2-7-4	4
4	BM610	Research ethics and professional/Scientific communication (Compulsory Course)*	2-0-0-4-2	2*
5	BM604	Introduction to Advanced Biology	2-0-2-5-3	3
6	BM----	Elective – II	---	3

*Credits not added to total credits required. **Total 18**

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	BM699	Project – I	0-0-32-16-16	16

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	BM799	Project – II	0-0-32-16-16	16

List of core courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	BM601	Fundamentals of Human physiology	3-0-2-7-4	4
2	BM604	Introduction to Advanced Biology	2-0-2-5-3	3
3	BM605	Biomedical Electronics and Communication	3-0-2-7-4	4
4	BM606	Biomaterials and Tissue interactions	2-0-2-5-3	3
5	BM607	Medical Devices and Equipment	3-0-2-7-4	4
6	BM608	Biomechanics	3-0-2-7-4	4
7	BM609	Physics of Medical Imaging	3-0-2-7-4	4
8	BM610	Research ethics and Professional/ Scientific communication (compulsory course)*	2-0-0-4-2	2

*Credits are not counted towards total credit requirements.

ii) M.Tech. in Chemical Engineering

Semester - I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH611	Advanced Chemical Reaction Engineering	3-0-2-7-4	4
2	CH602	Advanced Transport Phenomena	3-0-2-7-4	4
3	CH500	Chemical Engineering Technical Communication-I	0-0-2-2-1	1
4	CH ---	Elective -1		
5	CH ---	Elective -1		

Semester –II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH 601	Chemical Engineering Thermodynamics	3-0-2-7- 4	4
2	CH 610	Chemical Engineering Mathematics	3-0-2-7- 4	4
3	CH ---	Elective -1		
4	CH ---	Elective -2		
5	CH501	Chemical Engineering Technical Communication - II	0-0-2-2-1	1

Semester –III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH699	Project-I	0-0-30-15-15	15

Semester –IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH799	Project-II	0-0-30-15-15	15

Chemical Engineering List of Elective courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH607	Advanced Water Treatments Techniques	3-0-2-7-4	4
2	CH612	Interfacial Engineering	3-1-0-5-3	3
3	CH517	Innovation Management And Business Modelling	0-0-4-2-2	2
4	CH617	Chemical Engineering for Non-Chemical Engineers	3-1-0-5-3	3
5	CH507A	Introduction to Polymer Science and Engineering	3-0-2-7-4	4
6	CH516	Advanced Process Control	3-0-2-7-4	4

iii) M. Tech. in Civil Engineering (Specialization Water Resources and Environment)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE501	Advanced Surface Hydrology	3-1-0-5-3	3
2	CE502	Advanced Fluid Mechanics	3-1-0-5-3	3
3	CE505	Water Quality Assessment	3-0-2-7-4	4
4	CE---	Department Elective-I	---	3-4
5	CE---	Department Elective-II	----	3–4

Total: 15-17

Note: Allotment of dissertation topics will be made after the first semester.

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE504	Water Resources Planning and Management	3-1-0-5-3	3
2	CE503	Ground water Hydrology	3-1-0-5-3	3

3	CE506	Environment impact Assessment of Water Resources Development	3-1-0-5-3	3
4	CE---	Department Elective-III	----	3
5	-----	**Open Elective-I	----	3
			Total	**16**

**Dissertation topics would decide the nature of the open elective course subject to the approval of the department.

Student shall conduct preliminary studies related to the seminar and the project during the summer vacation period.

Semester –III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE507	**Seminar	0-0-4-2-2	2
2	CE699	Project- I	0-0-24-12-12	12
			Total 14	

**For the seminar, the students have to present a literature review and submit a report before mid sem.

Semester –IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE799	Project–II	0-0-36-18-18	18
			Total	**18**

List of Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE536	Agricultural Hydrology	2-1-2-4-3	3
2	CE619	Solid and Hazardous Waste Management and Circular Economy	3-1-0-5-3	3

iv) M.Tech. in Civil Engineering (Specialization in Structural Engineering and Geomechanics)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE520	Dynamics of Structures	3-1-0-5-3	3
2	CE521	Finite Element Analysis for Civil Engineering Applications	2-1-2-4-3	3
3	CE522	Advanced Design of Concrete Structures	3-0-2-7-4	3
4	CE523	Advanced foundation Engineering	3-1-0-5-3	3
5	CE524	Earth Retaining Structures and Slope Stability	3-1-0-5-3	3

Total = 15

Note: Allotment of dissertation topics will be made after the first semester.

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE525	Analysis and Design of industrial Structures	3-1-2-6-4	4
2	CE526	Computational Geomechanics	2-1-2-4-3	3
3	CE---	Department Elective - I	3-1-0-5-3	3
4	CE---	Department Elective - II	3-1-0-5-3	3
5	---	** Open Elective - I	3-1-0-5-3	3
			Total	**16**

The labs for the core courses will run in the alternative weeks to cover a total of 5 experiments, in each of the courses. Students shall conduct preliminary studies related to the seminar and the project during the summer vacation period.

**Dissertation topics would decide the nature of the open elective course subject to the approval of the department.

Student shall conduct preliminary studies related to the seminar and the project during the summer vacation period.

Semester –III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE527	**Seminar	0-0-2-1-1	1
2	CE699	Project- I	0-0-24-12-12	12
			Total	**13**

** For the seminar, the students have to present a literature review and submit a report before the mid-sem.

Semester –IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE799	Project–II	0-0-36-18-18	18
			Total	**18**

List of Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CE541	Soil-Structure Interaction Modelling and Analysis	3-0-0-6-3	3

Note: Dissertation consists of report submission, presentation of research work, and viva

v) M.Tech. in Computer Science and Engineering

Semester - I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS506	Data Structures and Algorithms	3-1-2-6-4	4
2	CS526	Mathematics for Computer Science	3-1-0-5-3	3
3	CS527	Computer System	3-0-2-7-4	4
4	CS509	PG Software lab	0-0-6-3-3	3
			Total	14

Semester - II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS---	Elective I	------	3
2	CS---	Elective II	-------	3
3	CS---	Elective III	-----	3 or 4
4	CS---	Elective IV	-----	3 or 4
5	-----	Elective V	-----	3 or 4
6	CS500	PG seminar - I	-----	0 (S/U)

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS551	Colloquium Series	---	0(S/U)
2	CS699	Project-I	0-0-28-14-14	14

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CS555	PG seminar (Topics specific to one's research Project)	--------	0(S/U)
2	CS799	Project-II	0-0-32-16-16	16

Appendix A: List of CSE Electives**

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1.	CS503	Machine Learning	3-0-2-7-4	4
2.	CS504	Artificial Neural Networks	3-0-0-6-3	3
3.	CS505	Digital Imaging Systems	2-0-2-5-3	3
4.	CS507	Multimedia Systems	2-0-2-5-3	3

5.	CS510	Advanced Computer Architecture	3-1-0-5-3	3
6.	CS511	Real Time Systems	2-0-2-5-3	3
7.	CS512	Artificial Intelligence	3-0-2-7-4	4
8.	CS515	Computer Graphics	3-0-0-6-3	3
9.	CS516	Wireless Ad-Hoc Networks	2-0-2-5-3	3
10.	CS517	Digital Image Processing and Analysis	2-1-2-4-3	3
11.	CS518	Computer Vision	2-0-2-5-3	3
12.	CS519	System Level Design And Modelling	3-0-0-9-3	3
13.	CS520	Database System Implementation	3-0-2-7-4	4
14.	CS521	Fundamentals of Data Sciences	2-0-2-5-3	3
15.	CS522	Social Computing and Networks	2-0-2-5-3	3
16.	CS523	Applied Cryptography	3-0-2-7-4	4
17.	CS524	Data Mining	3-0-0-6-3	3
18.	CS525	Post-Quantum Crypto	3-0-0-6-3	3
19.	CS530	Multi Agent Systems	2-0-2-5-3	3
20.	CS532	Security Analytics	2-0-2-5-3	3
21.	CS533	Reinforcement Learning	2-0-2-5-3	3
22.	CS535	Introduction To Game Theory And Mechanism Design	3-1-0-5-3	3
23.	CS539	Internet of Things	3-0-0-6-3	3
24.	CS540	Crypto currencies and Block chain Technology	3-0-0-6-3	3
25.	CS541	Security Aware Architectures	3-0-0-6-3	3
26.	CS542	Designing Systems For Machine Learning	2-0-2-5-3	3
27.	CS545	Computer Graphics Lab	0-0-2-1-1	1
28.	CS548	Edge Computing And Analytics	0-0-3-1.5-1.5	1.5
29.	CS549	Internet of Things Lab	0-0-3-1.5-1.5	1.5
30.	CS557	Artificial Intelligence For Health Care	2-0-2-5-3	3
31.	CS601	Approximation Algorithms	3-0-0-6-3	3
32.	CS602	Randomized Algorithms	3-0-0-6-3	3
33.	CS603	Combinatorial Optimizations	3-0-0-6-3	3
34.	CS604	Advanced Operating Systems	3-0-0-6-3	3

35.	CS606	Advanced Software Architecture	2-0-2-5-3	3
36.	CS607	Contemporary Computing Platforms	2-0-2-5-3	3
37.	CS608	Topics in Internet Technologies	2-0-2-5-3	3
38.	CS609	Network Science	2-0-2-5-3	3
39.	CS612	Advanced Machine Learning	2-0-2-5-3	3
40.	CS615	Biomedical Image Processing & Analysis	2-0-2-5-3	3
41.	CS616	Advanced Computer Vision	2-0-2-5-3	3
42.	CS617	Affective Computing and Interaction	2-0-2-5-3	3
43.	CS620	Introduction to Spatial Computing	3-0-2-7-4	4
44.	CS621	Probabilistic Graphical Models	3-0-0-6-3	3
45.	CS623	Multimedia Surveillance Systems	2-0-2-5-3	3
46.	CS622	Advanced Image Processing	2-0-2-5-3	3
47.	CS701	Special Topics in Complex Networks	3-0-2-7-4	4
48.	CS702	Special Topics in Social Computing	3-0-2-7-4	4
49.	CS720	Advanced Spatial Computing	3-0-0-6-3	3
50.	CS724	Advanced Data Mining	2-0-2-5-3	3

- **Note that this list would adapt with time as new courses are designed and floated. Course credits may also get updated. In general, any 500-level, 600-level and 700-level courses offered in the CSE dept would be included in this list (after approval from dept).**

Please Note:

- **Core courses:**14 credits
- **Elective Course credits**(16 credits or more as per following conditions:
  - Any PG course offered in the CSE Department.
  - At most one non-CSE PG course (with due approval from the CSE ACPGR and CSE HOD) can be considered.

vi) M.Tech. in Electrical Engineering (Specialization Communication & Signal Processing)

Semester –I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE521	Analytical Techniques for Communication & Signal Processing(core)	3-0-0-6-3	3
2	EE523	Advanced Digital Communication(core)	3-0-0-6-3	3

3	EE525	Communication & Signal Processing Lab: 1	0-0-3-1.5-1.5	1.5
4	EE527	Advanced DSP (core)	3-0-0-6-3	3
5	EE---	Elective1	---	3

Semester –II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE522	Adaptive Signal Processing(core)	3-0-0-6-3	3
2	EE524	Detection and Estimation Theory(core)	3-0-0-6-3	3
3	EE526	Communication & Signal Processing lab: 2	0-0-3-1.5-1.5	1.5
4	EE---	Elective II	---	3
5	------	Open Elective	---	3
6	EE---	Elective IV	---	3

Semester -III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE699	Project-I	0-0-30-15-15	15

Semester -IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE799	Project-II	0-0-30-15-15	15

Listof Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE625	Information Theory and Coding Techniques	3-0-0-6-3	3
2	EE626	Data Communication and Networking	3-0-0-6-3	3
3	EE627	Mobile and Wireless Communication	3-0-0-6-3	3
4	EE628	RF systems for Communication	3-0-0-6-3	3
5	EE629	Special Topics in Communication	3-0-0-6-3	3
6	EE638	Digital Image Processing	3-0-0-6-3	3
7	EE639	Computer Vision	3-0-0-6-3	3
8	EE640	Biomedical Signal Processing	3-0-0-6-3	3
9	EE641	Special Topics in Signal Processing	3-0-0-6-3	3
10	EE649	Theory of Antennas and Arrays	3-0-0-6-3	3
11	EE648	Standards for wireless communication systems	3-0-0-6-3	3
12	EE723	Next Generation Multiple Access Techniques	3-0-0-6-3	3

vii) M.Tech. in Electrical Engineering (Specialization Micro electronics and VLSI Design)

Semester –I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE531	Core-Semi conductor Device Physics modeling	3-0-0-6-3	3
2	EE533	Core-CMOS Analog IC Design	3-0-0-6-3	3
3	EE535	Core-Digital IC Design	3-0-0-6-3	3
4	EE537	Core Lab-Circuit Simulation Lab	0-0-4-2-2	2
5	----	Open Elective	---	3
6	EE539	Core-Seminar1	0-0-0-3-1	1

Total 15

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE530	Core-VLSI Fabrication Technology	3-0-0-6-3	3
2	EE532	Core Lab-Device Stimulation Lab	0-0-4-2-2	2
3	EE534	Core-Seminar 2	0-0-0-3-1	1
4	EE---	Program Elective-1	----	3
5	EE---	Program Elective-II	----	3
6	EE---	Program Elective-III	----	3
7	EE---	Program Elective-IV	----	3

Total 18

Semester –III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE699	Project -I	----	15

Total: 15

Semester -IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE799	Project -II	----	15

Total: 16

List of Electives

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1.	EE650	CMOS Active Filter Design	3-0-0-6-3	3
2.	EE651	Biomedical ASIC Design	3-0-0-6-3	3
3.	EE652	Broadband Communication Circuit Design	3-0-0-6-3	3
4.	EE653	Digital Signal Processing for VLSI	3-0-0-6-3	3
5.	EE654	Electronic Packaging	3-0-0-6-3	3
6.	EE655	Electronic System Design	3-0-0-6-3	3

7.	EE656	CAD for VLSI Design	3-0-0-6-3	3
8.	EE657	Mixed Signal IC Design	3-0-0-6-3	3
9.	EE658	Nano scale MOSFET and beyond CMOS Devices	3-0-0-6-3	3
10.	EE659	Radio Frequency Integrated Circuit Design	3-0-0-6-3	3
11.	EE660	Sensors and Instrumentation	3-0-0-6-3	3
12.	EE662	Selected Topics in Microelectronics and VLSI Design	3-0-0-6-3	3
13.	EE663	Frequency synthesizers, clock and data recovery Circuits	3-0-0-6-3	3
14.	EE673	Deep Learning for Computer Vision	3-0-0-6-3	3

viii) M.Tech. in Electrical Engineering (Specialization Power Engineering)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE511	HV Power Equipment	3-0-0-6-3	3
2	EE513	Simulation & Analysis of Modern Power Systems	3-0-4-8-5	5
3	EE515	Power Converter Analysis & Design	3-0-0-6-3	3
4	EE---	Department Elective –1	---	3

Total 14

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE510	High Voltage Engineering	3-1-4-7-5	5
2	EE512	Stability & Control of Power Systems	3-0-0-6-3	3
3	EE514	Design & Application of Electric Drives	3-1-0-5-3	3
4	---	Open Elective-I	---	3
5	EE518	Power Converter Analysis & Design Lab	0-0-4-2-2	2

Total 16

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE699	Project–I	0-0-30-15-15	15

Total 15

Semester - IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE799	Project–II	0-0-30-15-15	15

Total 15

Total Credits: 60

List of Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE601	Synchrophasor Technology & ITS Applications in Power	3-0-0-6-3	3
2	EE605	Fundamentals of Power System Operation under Restructured Environment	3-0-0-6-3	3
3	EE606	Optimization and control of Power System Operation	3-0-0-6-3	3
4	EE607	Power system protection	3-0-0-6-3	3
5	EE620	Power cable technology	3-0-0-6-3	3

ix) M.Tech. in Mechanical Engineering (Specialization in Mechanics and Design)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME501	Mathematics for Engineers (Core-I)	3-0-0-6-3	3
2	ME502	Applied Numerical Methods (Core-2)	3-0-0-6-3	3
3	ME517	Advanced Solid Mechanics (Core-4)	3-0-0-6-3	3
4	ME518	Multibody Dynamics (Core-5)	2-0-2-5-3	3
5	ME ---	*Department Elective – 1(DE1)	-	3 or 4

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME---	Specialization Elective - 1	3-0-0-6-3/3-0-2-7/4	3 or 4
2	ME---	Specialization Elective - 2	3-0-0-6-3/3-0-2-7/4	3 or 4
3	ME---	**Department Elective - 2 (DE2)	-	3 or 4
4	---	Open Elective – 1	-	3
5	---	Open Elective – 2	-	3

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME699	M.Tech. Thesis	0-0- 32-16-16	16

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME799	M.Tech. Thesis	0-0- 32-16-16	16

List of Specialization Elective Course in Mechanics & Design (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME515	Finite Elements Methods in Engineering	3-1-0-5-3	3
2	ME520A	Composite Materials	3-0-2-7-4	4
3	ME581	Automotive Engineering	3-0-0-6-3	3

4	ME524	Machinery Fault Diagnosis and Condition Monitoring	3-1-0-5-3	3
5	ME526	Atomistic Simulation and Modeling of Materials	2-0-2-5-3	3
6	ME516	Introduction to Plasticity	3-0-0-6-3	3
7	ME624	Machine Vibration Analysis	3-0-0-6-3	3
8	ME514	Fracture & Fatigue	3-0-0-6-3	3
9	ME512	Robot Manipulators: Kinematics, Dynamics and Control	3-0-2-7-4	4
10	ME511	Theory of Elasticity	3-0-0-6-3	3

x) M.Tech. in Mechanical Engineering (Specialization in Manufacturing Engineering)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME501	Mathematics for Engineers (Core-1)	3-0-0-6-3	3
2	ME502	Applied Numerical Methods (Core-2)	3-0-0-6-3	3
3	ME547	Analysis of Material Removal Processes (Core-4)	3-0-0-6-3	3
4	ME548	Analysis of Casting, Forming and Joining Processes (Core-5)	3-0-0-6-3	3
5	ME---	*Department Elective-1 (DE1)	-	3 or 4

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME---	Specialization Elective - 1	3-0-0-6-3/3-0-2-7/4	3 or 4
2	ME---	Specialization Elective - 2	3-0-0-6-3/3-0-2-7/4	3 or 4
3	ME---	** Department Elective-2 (DE2)	-	3 or 4
4	---	Open Elective – 1	-	3
5	---	Open Elective – 2	-	3

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME699	M.Tech. Thesis	0-0- 32-16-16	16

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME799	M.Tech. Thesis	0-0- 32-16-16	16

List of Specialization Elective Course in Manufacturing Engineering (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME549	Additive Manufacturing	3-0-0-6-3	3

2	ME546	Micro Manufacturing	2-0-2-5-3	3
3	ME545	Sustainable Design & Manufacturing	2-0-4-6-4	4
4	ME542	Modern Manufacturing Process	3-0-0-6-3	3
5	ME541	Manufacturing Science- I	3-0-0-6-3	3
6	ME515	Finite Elements Methods in Engineering	3-1-0-5-3	3
7	ME643	Science of Machining	3-0-0-6-3	3
8	ME559	Computer Integrated Design and Manufacturing Systems	2-0-2-5-3	3

xi) M.Tech. in Mechanical Engineering (Specialization in Thermal & Fluids Engineering)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME501	Mathematics for Engineers (Core-1)	3-0-0-6-3	3
2	ME502	Applied Numerical Methods (Core-2)	3-0-0-6-3	3
3	ME571	Advanced Fluid Mechanics (Core-4)	3-0-0-6-3	3
4	ME579	Advanced Thermodynamics (Core-5)	3-0-0-6-3	3
5	ME---	*Department Elective-1 (DE1)	-	3 or 4

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	SPE-1	Specialization Elective - 1	3-0-0-6-3/3-0-2-7/4	3 or 4
2	SPE-2	Specialization Elective - 2	3-0-0-6-3/3-0-2-7/4	3 or 4
3	ME---	**Department Elective-2 (DE2)	-	3 or 4
4	---	Open Elective – 1	-	3
5	---	Open Elective – 2	-	3

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME699	M.Tech. Thesis	0-0- 32-16-16	16

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME799	M.Tech. Thesis	0-0- 32-16-16	16

List of Specialization Elective Course in Thermal & Fluids Engineering (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME683	Micro Hydrodynamics and its Applications	3-0-0-6-3	3
2	ME681	Thermal Desalination of Saline water	3-0-0-6-3	3

3	ME685	Combustion Engineering	3-0-0-6-3	3
4	ME677	Thermal Management of Electronics	3-0-0-6-3	3
5	ME674	Solar Thermal Engineering	3-0-0-6-3	3
6	ME572	Advanced Conduction and Radiation Heat Transfer	3-0-0-6-3	3
7	ME576	Convective Heat Transfer	3-0-0-6-3	3
8	ME575	Turbomachines	3-0-0-6-3	3
9	ME580	Computational Fluids Dynamics	3-0-0-6-3	3
10	ME582	Gas Turbine and Rocket Propulsion	3-0-0-6-3	3
11	ME584	Fundamentals of Compressible Flows	3-0-0-6-3	3

xii) M.Tech. in Mechanical Engineering (Specialization in Computational Mechanics)

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME501	Mathematics for Engineers(Core-1)	3-0-0-6-3	3
2	ME502	Applied Numerical Methods(Core-2)	3-0-0-6-3	3
3	ME---	**Department Elective-2 (DE2)	-	3
4	---	Open Elective – 1	-	3
5	---	Open Elective – 2	-	3

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME---	Specialization Elective - 1	3-0-0-6-3/3-0-2-7/4	3 or 4
2	ME---	Specialization Elective - 2	3-0-0-6-3/3-0-2-7/4	3 or 4
3	ME---	**Department Elective-2 (DE2)	-	3 or 4
4	---	Open Elective – 1	-	3
5	---	Open Elective – 2	-	3

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME699	M.Tech. Thesis	0-0- 32-16-16	16

Semester – IV

Sr. No.	CourseNo.	Course Title	L-T-P-S-C	Credits
1	ME799	M.Tech. Thesis	0-0- 32-16-16	16

List of Specialization Elective Course in Computational Mechanics (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME 580	Computational Fluid Dynamics	3-0-0-6-3	3
2	ME 515	Finite Element Methods in Engineering	3-1-0-5-3	3
3	ME504	Deep Learning for Physical Systems	3-0-0-6-3	3
4	ME526	Atomistic Simulation and Modeling of Materials	2-0-2-5-3	3
5	ME506	Non Linear Finite Element Methods	3-0-0-6-3	3
6	ME507	Fundamentals and Modeling of Turbulent Flows	3-0-0-6-3	3

DE1*: Department Elective Courses

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ME518	Multibody Dynamics	2-0-2-5-3	3
2	ME579	Advanced Thermodynamics	3-0-0-6-3	3
3	ME508	Wave Propagation	3-0-0-6-3	3
4	ME503	Measurement and Control	2-0-2-5-3	3

DE2: Department Elective Courses**

The students are free to choose any courses floated by the department faculty.

Note: If a student takes the four credit courses and he/she can complete the 15 credit requirement with four courses. In particular, if the student opt the four credit courses in SPE1, SPE2 and DE2 then the student can opt to take only one elective course.

xiii) M.Tech. in Materials Engineering :-

Semester – I

Sr. No.	Course code	Course title	L T P S C	Credits
1.	MM551	Mathematical and Experimental Methods for Materials Engineering	3-0-2-7-4	4
2.	MM552	Thermodynamics and Kinetics of Materials	3-0-0-6-3	3
3.	MM553	Physics of Materials	3-0-0-6-3	3
4.	MM554	Mechanical Behaviour of Materials	3-0-0-6-3	3
5.	MM555	X-Ray Diffraction And Spectroscopic Techniques	2-0-2-5-3	3

Semester-II

Sr. No.	Course code	Course title	L T P S C	Credits
1.	MM556	Electron Microscopy And Microanalysis	3-0-2-7-4	4

2.	MM---	Department Elective I	--	--
3.	MM---	Department Elective II	--	--
4.	MM---	Department Elective III	--	--
5.	----	Open Elective	--	--

Semester-III

Sr. No.	Course code	Course title	L T P S C	Credits
1.	MM699	M. Tech Project – I	0-0-32-16-16	16

Semester-IV

Sr. No.	Course code	Course title	L T P S C	Credits
1.	MM799	M.Tech Project – II	0-0-32-16-16	16

List of Specialization Elective Course

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	MM322	Modeling Of Metallurgical Systems	0-0-2-1-1	1
2	MM505	Electron Microscopy And Microanalysis	3-0-0-6-3	3
3	MM522	Electrochemistry And Degradation Of Materials	3-0-0-6-3	3
4	MM532	Computational Fracture Mechanics	3-0-0-6-3	3

xiv) M.Tech. in Autonomous Systems & Drone Technology

Semester – I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR501	Drone Aerodynamics and Autonomous Control	2-0-2-5-3	3
2	DR502	Sensor Systems & Autonomy	2-0-2-5-3	3
3	XXX	Elective 1	--	3/4
4	XXX	Elective 2	--	3/4
5	DR551	Drone Design Lab	0-0-6-3-3	3

Semester – II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR503	Drone Data Processing and GIS	2-0-2-5-3	3
2	XXX	Elective 3	--	3/4
3	XXX	Elective 4	--	3/4
4	XXX	Elective 5	--	3/4

5	DR552	Autonomous Systems Design Lab	0-0-6-3-3	3

Semester – III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR699	MTech Project I	0-0-32-16-16	16

Semester – IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR799	MTech Project II	0-0-32-16-16	16

List of Specialization Elective Course in Autonomous Systems & Drone Technology (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	EE207	Control Engineering	3-1-0-5-3	3
2	EE316	Embedded Systems & Applications	3-0-0-6-3	3
3	AI 207	Control theory for Intelligent Autonomous Systems	3-1-0-5-3	3
4	EE521	Analytical Techniques For Signal Processing And Communication	3-0-0-6-3	3
5	EE645	Modern Radar Systems	3-0-0-6-3	3
6	EE646	IoT and its Applications	3-0-0-6-3	3
7	EE653	Digital Signal Processing For VLSI	3-0-0-6-3	3
8	EE721	Optical Fiber Communication	3-0-0-6-3	3
9	DR511	Drone Forensics, Security, and Privacy	2-0-2-5-3	3
10	DR701	Advanced Topics in Autonomous Systems	2-0-2-5-3	3
11	AI511	HCI &Visualization	2-0-2-5-3	3
12	CS503	Machine Learning	3-0-2-7-4	4
13	CS504	Artificial Neural Networks	3-0-0-6-3	3
14	CS505	Digital Imaging Systems	2-0-2-5-3	3
15	CS507	Multimedia System	2-0-2-5-3	3
16	CS511	Real Time Systems	2-0-2-5-3	3

17	CS512	Artificial Intelligence	3-0-2-7-4	4
18	CS515	Computer Graphics	3-0-0-6-3	3
19	CS516	Wireless Ad-Hoc Networks	2-0-2-5-3	3
20	CS517	Digital Image Processing and Analysis	2-1-2-4-3	3
21	CS518	Computer Vision	2-0-2-5-3	3
22	CS519	System Level Design And Modelling	3-0-0-6-3	3
23	CS523	Applied Cryptography	3-0-2-7-4	4
24	CS525	Post-Quantum Crypto	3-0-0-6-3	3
25	CS530	Autonomous Multi Agent Systems	2-0-2-5-3	3
26	CS533	Reinforcement Learning	3-0-0-6-3	3
27	CS539	Internet of Things	3-0-0-6-3	3
28	CS612	Advanced Machine Learning	2-0-2-5-3	3
29	CS616	Advanced Computer Vision	2-0-2-5-3	3
30	CS620	Introduction to Spatial Computing	3-0-2-7-4	4
31	CS622	Advanced Image Processing	2-0-2-5-3	3
32	CS623	Multimedia Surveillance Systems	2-0-2-5-3	3
33	CE304	Geomatics Engineering	2-1-2-5-3	3
34	CE563	Geo informatics For Land use Planning	3-0-2-7-4	4
35	CE562	Global Navigation Satellite Systems (GNSS)	3-0-2-7-4	4
36	CE561	Geographic Information System(GIS)	3-0-2-7-4	4
37	CE560	Geo informatics For Natural Disasters	3-0-2-7-4	4
38	CE605	Advance Remote Sensing	2-0-2-5-3	3
39	ME518	Multibody Dynamics	3-0-0-6-3	3
40	ME520A	Composite Material	3-0-0-6-3	3
41	ME624	Machine Vibration Analysis	3-0-0-6-3	3
42	ME512	Robot Manipulators: Kinematics, Dynamics, and Control	3-0-0-6-3	3
43	ME580	Computational Fluid Dynamics	3-0-0-6-3	3
44	ME508	Wave Propagation	3-0-0-6-3	3
45	ME504	Deep learning for physical systems	3-0-0-6-3	3

46	CH516	Advanced process control	3-0-2-6-4	4
47	CH520	State Estimation and Sensor Fusion course	3-0-2-6-4	4

XV) Tech in E-Waste Resources Engineering and Management

Semester I

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ER601	Introduction to waste and E-Waste management	3-1-0-7-4	4
2	ER602	Electrometallurgy and Material Recycling	3-0-2-6-4	4
3	XX---	Elective 1	--	3/4
4	XX---	Elective 2	--	3/4

Semester II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ER603	Electron Microscopy and Microanalysis	3-0-2-7-4	4
2	ER604	Process Metallurgy in Material recycling	3-0-2-6-4	4
3	CH700	Scientific Writing and Technical Communication	3-0-0-6-3	3
4	XX---	Elective 3	--	3/4
5	XX---	Elective 3	--	3/4

Semester III

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ER699	Project-I	0-0-30-15-15	15

Semester IV

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	ER799	Project -II	0-0-30-15-15	15

List of Specialization Elective Course in E-Waste Resources Engineering and Management (SPE-1 & SPE-2)

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	CH504	Numerical Methods for Engineers	3-0-2-7-4	4
2	CH601	Advanced Chemical Engineering Thermodynamics	3-0-2-7-4	4

3	CH521	System Instrumentation and Thermal Characterization	3-0-2-7-4	4
4	CH506	Process Safety and Risk Management	3-1-0-5-3	3
5	CH305	Process Design and Economics	3-1-0-5-3	3
6	CH512	ML Applications in Process Engineering	3-1-2-6-4	4
7	CH520	Sensor Fusion and State Estimation	3-0-2-7-4	4
8	MM531	Introductory Material Informatics	3-1-0-5-3	3
9	CEXXX	EIA and LCA for Waste Management	3-1-0-5-3	3
10	XX---	Govt Policies on E-Waste	3-0-0-4-3	3
11	XX---	Supply Chain Management and Circular Economy	3-1-0-5-3	3

2.8.7 ANY EXIT DEGREE PROPOSED FOR STUDENTS WHO COULD NOT COMPLETE THE COURSE:

If a student successfully fulfills all academic requirements of the first year of the programme but is unable to proceed to the second year for any reason, they shall be eligible for the award of a Postgraduate Diploma (PG Diploma) upon completion of Year 1, subject to the regulations of the Institute.

2.8.8 POST-GRADUATE DIPLOMA IN DRONE TECHNOLOGY

Program Overview:

Program Objectives: The **Post-Graduate Diploma in Drone Technology (PGDT)** aims to develop skilled professionals who can design, deploy, and manage modern drone and autonomous technologies across diverse application domains. The key objectives of the programme are:

- To provide a strong foundation in the **principles of drones** including flight mechanics, sensing, navigation, control, and communication.
- To equip learners with **hands-on skills** in building, integrating, testing, and operating drone platforms by combining hardware, software, and embedded systems.
- To develop expertise in **autonomous decision-making**, using technologies such as GPS/GNSS, sensor fusion, computer vision, artificial intelligence, and machine learning.
- To train students in **data acquisition, processing, and analysis**, including geospatial data, imaging, and real-time sensor data generated by drone systems.
- To promote awareness of **safety standards, regulatory frameworks, security, privacy, and ethical considerations** related to drone operations.
- To enable learners to apply drone and autonomous technologies to **real-world problems** in sectors such as agriculture, infrastructure monitoring, disaster management, logistics, surveillance, and environmental monitoring.
- To prepare graduates for **industry roles, research opportunities, and entrepreneurship** in the rapidly growing drone and autonomous systems ecosystem.

Program Highlights:

- **Industry-oriented curriculum** covering drones, autonomous systems, sensors, AI, control, and data analytics.
- Strong emphasis on **hands-on learning**, including labs, simulations, field experiments, and system prototyping.
- **An interdisciplinary approach**, integrating concepts from computer science, electrical engineering, mechanical engineering, AI, and geospatial technologies.
- Exposure to **advanced topics** such as autonomous navigation, computer vision, multi-agent systems, and drone data processing.
- Focus on **regulatory compliance, safety, forensics, security, and privacy**, aligned with national and global drone policies.
- **Capstone project / practical training** addressing real-world use cases and industry-relevant challenges.
- Opportunities for collaboration with **research centres, startups, and industry partners** working in drones and autonomous systems.
- Designed for **working professionals and graduates**, enhancing employability in high-growth technology sectors.

Program Duration:

- 1 year (two semesters)

Eligibility:

1. Candidates must hold an undergraduate degree (B.E./B.Tech/B.Sc. Engg/ B.Sc. or Equivalent degree) in Aeronautical/ Aerospace/ Electrical / Mechanical/ /Electronics /Computer Science and Engineering/Instrumentation/Civil/Geotech or allied courses with a minimum of 55 % marks from a recognized university, with at least one year industry experience in the relevant field.

OR

Candidates with 10+2 courses (with mathematics), and a 3-year diploma in Aeronautical/ Aerospace/ Electrical / Mechanical/ /Electronics /Computer Science and Engineering/Instrumentation/Civil/Geotech or allied courses with a minimum of 55 % marks from a recognised university are also eligible to apply, with at least three years industry experience in the relevant field.

OR

Candidates with 5 years of relevant Industry experience with NSQF Skill level 4.0 or above.

2. All relaxation norms as per the Government of India rules will be applicable for the admissions process.
3. Shortlisted candidates will be called for a Written Exam and/or Personal Interview.
4. Meeting the minimum eligibility criteria DOES NOT guarantee shortlisting or admission to the program.

Student Intake:

- In the first year, the program is planned to accommodate 10 students (including all reservation norms as per the Government of India Rule).

Program Completion Requirements:

- Students will be required to complete the minimum academic requirements of the program, i.e.
  - 12 credits of mandatory coursework
  - 9 credits of elective courses
  - 9 credits of Capstone project
- Minimum CGPA of 5.0
- Students must adhere to the guidelines and policies of the institutes and maintain strict discipline
- Students must complete all financial obligations as part of the program

Awarding Degree:

- A degree of "**POST-GRADUATE DIPLOMA IN DRONE TECHNOLOGY**" will be awarded by IIT Ropar.

Semester I:

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR501	Drones and Autonomous Systems Fundamentals	2-0-2-5-3	3
2	DR502	Sensor Systems and Technologies	2-0-2-5-3	3
3	XXX	Elective 1	--	3/4
4	XXX	Elective 2	--	3/4

5	DR551	Drone Design Lab	0-0-6-3-3	3

Semester II

Sr. No.	Course No.	Course Title	L-T-P-S-C	Credits
1	DR503	Drone Data Processing and GIS	2-0-2-5-3	3
2	XXX	Elective 3	--	3/4
3	DR599	Capstone Project	0-0-18-9-9	9

Total Program Credits: 30 to 33 credits

List of Elective Courses*:

This list is non-exhaustive, with scope for more relevant courses to be added/removed as the case may be. Since this is an interdisciplinary program, the students might benefit from the B. Tech. course of another branch (i.e. branch other than they hold bachelor degree), thus out of three electives, one of the electives can be taken as below 500 level courses.

Sr. No.	Course Code	Title	Credit
1	EE207	Control Engineering	3-1-0-7-3
2	EE316	Embedded Systems & Applications	3-0-0-6-3
3	AI 207	Control theory for Intelligent Autonomous Systems	3-1-0-5-3
4	EE521	Analytical Techniques For Signal Processing And Communication	3-0-0-6-3
5	EE645	Modern Radar Systems	3-0-0-6-3
6	EE646	IoT and its Applications	3-0-0-6-3
7	EE653	Digital Signal Processing For VLSI	3-0-0-6-3
8	EE721	Optical Fiber Communication	3-0-0-6-3
9	DR511	Drone Forensics, Security, and Privacy	2-0-2-5-3
10	DR701	Advanced Topics in Autonomous Systems	2-0-2-5-3
11	AI511	HCI & Visualization	2-0-2-5-3
12	CS503	Machine Learning	3-0-2-7-4
13	CS504	Artificial Neural Networks	3-0-0-6-3
14	CS505	Digital Imaging Systems	2-0-2-5-3

15	CS507	Multimedia System	2-0-2-5-3
16	CS511	Real Time Systems	2-0-2-5-3
17	CS512	Artificial Intelligence	3-0-2-7-4
18	CS515	Computer Graphics	3-0-0-6-3
19	CS516	Wireless Ad-Hoc Networks	2-0-2-5-3
20	CS517	Digital Image Processing and Analysis	2-1-2-4-3
21	CS518	Computer Vision	2-0-2-5-3
22	CS519	System Level Design And Modelling	3-0-0-6-3
23	CS523	Applied Cryptography	3-0-2-7-4
24	CS525	Post-Quantum Crypto	3-0-0-6-3
25	CS530	Autonomous Multi Agent Systems	2-0-2-5-3
26	CS533	Reinforcement Learning	3-0-0-6-3
27	CS539	Internet of Things	3-0-0-6-3
28	CS612	Advanced Machine Learning	2-0-2-5-3
29	CS616	Advanced Computer Vision	2-0-2-5-3
30	CS620	Introduction to Spatial Computing	3-0-2-7-4
31	CS622	Advanced Image Processing	2-0-2-5-3
32	CS623	Multimedia Surveillance Systems	2-0-2-5-3
33	CE304	Geomatics Engineering	2-1-2-5-3
34	CE563	Geoinformatics For Land use Planning	3-0-2-7-4
35	CE562	Global Navigation Satellite Systems (GNSS)	3-0-2-7-4
36	CE561	Geographic Information System (GIS)	3-0-2-7-4
37	CE560	Geoinformatics For Natural Disasters	3-0-2-7-4
38	CE605	Advance Remote Sensing	2-0-2-5-3
39	ME518	Multibody Dynamics	3-0-0-6-3
40	ME520A	Composite Material	3-0-0-6-3

41	ME624	Machine Vibration Analysis	3-0-0-6-3
42	ME512	Robot Manipulators: Kinematics, Dynamics and Control	3-0-0-6-3
43	ME 580	Computational Fluid Dynamics	3-0-0-6-3
44	ME508	Wave Propagation	3-0-0-6-3

COURSES OUTLINE:

Credits: 2-0-2-5-3

Course Description:
This course introduces the fundamental principles underlying drones and autonomous systems from a systems engineering perspective. The course focuses on the architecture and control components that enable autonomous behavior in aerial systems. Emphasis is placed on understanding drone structures, aerodynamics, autonomy pipelines, control hierarchies, simulation-based development, and safety and regulatory considerations.

Learning Outcomes:
Upon completion of this course, students will be able to:

1. Explain the architecture, structure and functional components of drone and autonomous systems.
2. Describe flight mechanics, aerodynamics and control hierarchies used in drones/UAVs. 3. Understand coordinate frames, state variables, and the role of estimation in autonomous flight.
4. Explain autonomy pipelines and levels of autonomy in unmanned systems. 5. Use simulation tools to analyze basic drone behavior and system performance. 6. Recognize safety, regulatory, and ethical considerations in drone operations.

DR502: Sensor Systems & Autonomy
Credits: 2-0-2-5-3

Course Description:
This course introduces sensor systems used in drones and autonomous platforms, emphasizing their role in enabling autonomous navigation and control. Sensors are studied as sources of uncertain information from which autonomous systems estimate their state. The course covers inertial, navigation, optical, and range sensors, along with calibration, signal conditioning, and data acquisition. Fundamental concepts of sensor fusion and state estimation are introduced to explain how multiple sensors are integrated to support guidance and control. Issues of sensor reliability, failure modes, and security relevant to trustworthy autonomy are also discussed.

Learning Outcomes:
Upon completion of this course, students will be able to:

1. Identify sensors commonly used in drone and autonomous systems and describe their operating principles.
2. Analyze sensor performance in terms of noise, bias, drift, and uncertainty. 3. Perform basic sensor calibration and validation.
4. Explain the role of state estimation and sensor fusion in autonomous navigation and control.
5. Interface sensors with embedded systems for data acquisition and preprocessing. 6. Recognize sensor-related failures and vulnerabilities affecting safe autonomous

operation.

DR503: Drone Data Processing and GIS

Credits: 2-0-2-5-3

Course Description:
This course introduces the processing and analysis of drone-acquired spatial data for mapping, environmental modeling, and autonomous decision support. The emphasis is on transforming raw drone data into structured environment representations that can be used for navigation, planning, and analysis. The course integrates geospatial concepts with drone data workflows and real-world applications.

Learning Outcomes:
Upon completion of this course, students will be able to:

1. Plan drone data acquisition for geospatial applications.
2. Process drone imagery and sensor data into spatial datasets.
3. Construct terrain and environment models from drone data.
4. Analyze spatial data for decision-making and planning.
5. Understand spatial accuracy, uncertainty, and error propagation.
6. Apply drone-based geospatial analysis to real-world scenarios.

DR551: Drone Design Lab [0-0-4-2-Embedded Foundation, Arduino & ESP32 programming, Basic Python programming, UAV platforms, Sensors & Calibration , Control Systems Implementation, IoT & Communication.

3. M. Sc. in Data Science and Management

3.1 Program Delivery Logistics:

- The two-year program will be delivered in four semesters and will be delivered in an offline mode and co-taught by faculties from IIM Amritsar and IIT Ropar. In case of exigencies, some sessions/courses may be conducted in an online mode.
- The students will be hosted at each institute for a period of one year (first year in IIT Ropar and second year in IIM Amritsar).
- The medium of instruction will be in English.

3.2 Program Eligibility and Intake:

- In the first year, the program is planned to accommodate 60 students (including all reservation norms as per the Government of India Rule).
- The minimum eligibility criteria for candidates is decided as follows:
    - 60% or 6.0 CPI/CGPA or First Class, as defined by the awarding university or institute, in the qualifying degrees mentioned below:
    - The qualifying degree includes B. Tech. / BE / BS / B. Pharm. / B. Arch. / B. Des. / B. Sc. / M. Sc. / MCA / MBA or any other equivalent degree.
    - The qualifying degree must have mathematics and computer science courses.
    - Test score from CAT/GATE/GMAT/GRE/JAM from the past three years.
- Shortlisted candidates will be called for a Personal Interview.
- Meeting the minimum eligibility criteria DOES NOT guarantee short-listing or admission to the program.
- The final selection criteria for the program is provided in Annexure III.

- All reservation norms as per the Government of India rules will be applicable for the admissions process.

3.3 Program Curriculum:

- The program co-prepared by IIM Amritsar and IIT Ropar includes a mixture of courses from the areas of Algorithms and Data Structures, Statistics, Data Analytics, Information Systems, and Management.
- The two-year program will be delivered in four semesters and will be co-taught by faculties from both the hosting institutes and the students will be hosted at each institute for a period of one year (first year in IIT Ropar and second year in IIM Amritsar.
- The course work is designed to cover 825 contact hours, which includes 75 hours for project work.
- Each session to be delivered are planned for a duration of 75 minutes.
- A Credit system will be followed by the IIT Ropar team with One Credit equivalent to 12.5 contact hours or 10 sessions.
- A Unit system will be followed by the IIM Amritsar team with One Unit equivalent to 25 contact hours or 20 sessions.
- For every course of 2 credits or 1 unit or 25 hours, the participants are expected to spend an additional 50 hours in preparation and project works. Similarly, equivalent expectation of additional efforts is expected for courses designed for other credits/units as well.
- The participants will be engaged for a total of 66 Credits or 33 Units, which translates to 825 hours.
- Approximately 80% of the course-work is designed as Mandatory subjects in the curriculum. Remaining credits are completed through Electives, Summer Live Project, and Final Project.
- The **Summer Live Project** will be an option for students to pursue a project either with an academic faculty (of reputed institutes in India or abroad) or with a firm, during the break between second and third semesters, and will be considered equivalent to one unit or two credits (25 hours). The summer live project has to be attained by the students by themselves. Upon successful completion, a report and a presentation (in front of an assigned panel) have to be submitted, along with a certificate from the faculty or firm guiding the project.
- The **Final Capstone Project** will be pursued in the fourth semester along with the course work. The project will be equivalent to three units or six credits (75 hours). The project will be guided by one faculty from IIM Amritsar and one faculty from IIT Ropar. The successful completion of the project is mandatory to complete the program.
- The students may get the opportunity to take part in the **International Immersion program** of IIM Amritsar.
    i. The eligibility requirements and credit calculation will be applicable as per the rules mentioned in the International Exchange Policy of IIM Amritsar.
    ii. If the Immersion program taken by an outgoing student involves gaining credits from the institute visited, the student will be responsible to ensure the transfer of grade transcripts to the International Relations Office at IIM Amritsar.
- The Semester-wise break-up of the mandatory subjects offered are given as follows:

(i) The first semester will include the following subjects:

Course Code	Course Title	(L-T-P-S-C)/Credit
DS501	Programming and Data Structures	2-0-0-4-2
DS502	Matrix Analysis for Data Engineering	2-1-0-4-2
DS503	Fundamentals of Statistics	2-1-0-4-2
DS504	Database Management Systems	2-0-0-4-2
DS505	Managerial Economics	2-0-0-4-2
DS506	Marketing Management	2-0-0-4-2
DS507	Essentials of Business Communications	2-0-0-4-2

DS508	People Management	2-0-0-4-2
	Total	16

Table 1: First Semester Courses

(ii) The second semester will include the following subjects:

Course Code	Course Title	(L-T-P-S-C)/Credit
DS511	Applied Multivariate Analysis	2-0-0-4-2
DS512	Fundamentals of Operations Research	2-0-0-4-2
DS513	Foundations of Data Science	2-0-0-4-2
DS514	Data Mining for Business Applications	2-0-0-4-2
XXXX	Financial Statements and Management (Introduction)	1Credit
XXXX	Operations and Supply Chain Management	1Credit
XXXX	Computer & Information Systems	1Credit
	Total	11

Table 2: Second Semester Courses

v) The Summer Live Project will be pursued after the first two semesters and has to be completed before the commencement of the third semester. The weightage for the Summer Live Project will carry a weightage of 1 unit or 2 credits.

iv) The third semester will include the following subjects apart from the electives chosen by the participants:

Semester 3	IIT Credits	IIM Units	# Sessions
Time Series Analysis and Econometrics	2	1	20
Big Data Analytics and Visualization	2	1	20
Predictive Analytics	2	1	20
Applied Artificial Intelligence and Machine Learning	2	1	20
Strategic Management (Introduction)	2	1	20
Business Research Methods	2	1	20
Advanced Operations Research	2	1	20
Electives			
Total (Excluding Electives)	14	7	140

Table 3: Third Semester Courses

(v) The fourth semester will include the Final Project apart from the electives chosen by the participants:

Semester 4	IIT Credits	IIM Units	# Sessions
Final Capstone Project	6	3	60
Legal Aspects of Business	1	0.5	10
Electives			
Total (Excluding Electives)	7	3.5	70

Table 4: Fourth Semester Courses

- The mandatory subjects amount to 23 units or 46 credits (575 hours), the Summer Live Project amounts to 1 unit or 2 credits (25 hours), and the Final Project will carry 3 units or 6 credits (75 hours).
- The remaining 6 units or 12 credits (150 hours) shall be attained by the participants through the Electives offered.
- Completion of 33 units or 66 credits is mandatory for the completion of the program.
- To ensure a relatively uniform distribution of courses across semesters, the electives should be as mentioned below:

i. In the third semester,
   a. minimum of 1 unit or 2 credits of elective courses has to be completed.
   b. maximum of 2 units or 4 credits of elective courses can be opted.

ii. In the fourth semester,
   a. minimum of 4 units or 8 credits of elective courses has to be completed.
   b. maximum of 5 units or 10 credits of elective courses can be opted.

- Students who maintain a CGPA of 3.0 or above will have an option to Audit a maximum of 4 credits of elective courses in their third and fourth semester. Students who enroll for an audit course are expected to do all the work just as they would for a regular course. Students will be awarded a grade for the audited course as per the grading scheme. The grade for audit courses will not be included for the computation of CGPA.

- The tentative list of electives is listed below in Table 5.

Tentative Elective List
Advanced Big Advanced Analytics
Analytics in Forecasting and Prediction
Applied Regression Analysis
Cloud Computing
Deep Learning
Financial Engineering
Marketing Analytics
Natural Language Processing
Non-Linear Programming
Operations & Supply Chain Analytics
Pattern Recognition & Neural Networks
People Analytics
Retail Analytics
Risk, Performance, and Decision Analysis
Social Computing
Spatial Analysis & Geographic Information System
Stochastic Programming
System Simulation
Total Quality Management & Six Sigma

Table 5: Tentative Electives List

3.4 Course Scheduling:

The program will be delivered by faculties from both the host institutes, along with external/visiting faculties, based on the requirement.

The scheduling of classes will be kept flexible for the administrative office to handle the same, based on the availability of faculties and other required logistics.

The timetable for each semester will be made available before the commencement of the term. The timetable will include the mid-semester and end-semester examinations as applicable.

The quizzes, projects, and other assignments or submissions for each course will be the prerogative of the concerned faculty.

3.5 Grading:

The courses, the summer live project, as well as the final project will be graded on a scale as per the grading scheme mentioned on Annexure II. The concerned faculty or faculties will be awarding the grades for each component or courses considering the best interest of students, without any prejudice or favouritism to

anyone.

Every course will have several components, which will be mentioned in the course outline for each course. The concerned faculty will have the prerogative to design the course outline with some mandatory components. The final grade for the course will be based on the marks gained by the students in various components and their respective weightage.

3.6 Attendance Criteria:

Attendance is an important aspect of the learning process and students are expected to attend all the sessions of each course for the entire duration of each session.

For handling emergency situations, some flexibility will be provided, which is not a freedom to manage attendance.

For all the courses that are delivered by faculties, a minimum of 80% attendance has to be maintained by the participants.

Failure to meet 80% attendance in a particular course can lead to drop(s) in the grade obtained by the student in the concerned course.

- If the attendance obtained by the student is between 70% and 79.99%, 1 grade will be reduced.
- If the attendance obtained by the student is between 60% and 69.99%, 2 grades will be reduced.
- If the attendance obtained by the student is between 50% and 59.99%, 3 grades will be reduced.
- If the attendance obtained by the student is below 50%, the student will get an F grade.

3.7 Program Completion Requirements:

- Meet the minimum academic requirements of the program, which includes the completion of:
    - 46 Credits or 23 Units of mandatory Core Courses.
    - 12 Credits or 6 Units of Elective Courses.
    - Summer Live Project of 2 Credits or 1 Unit.
    - Final Capstone of 6 Credits or 3 Units.
- Minimum CGPA to be achieved and maximum DCPs that can be accumulated as per the grading scheme mentioned in Annexure II.
- Adhere to the guidelines and policies of both the institutes and maintain strict discipline.
- Complete all financial obligations as part of the program.

3.8 Placement Opportunities:

For the students who meet the requirements of the program, the placement cells of both IIM Amritsar and IIT Ropar will be providing opportunities as per the placement policies of the respective institutions.

3.9 Awarding Degree:

A joint degree of “MSc. in Data Science and Management” will be awarded by both IIM Amritsar and IIT Ropar.

3.10 Alumni Status:

Upon completion of the degree, the participants will obtain alumni status of both the institutes.

3.11Grading Scheme

M.Sc. in Data Science and Management program will follow a grading scheme as described below. The grading for each course will be done by the respective faculty without any prejudice or favouritism to anyone. The grading scheme will have 13 levels ranging from A+ through F as mentioned in Table II.1 below:

Letter Grade	Grade Points
A+	4.33
A	4
A-	3.67
B+	3.33
B	3
B-	2.67
C+	2.33
C	2
C-	1.67
D+	1.33
D	1
D-	0.67
F	0
AP	Audit Pass
AF	Audit Fail

Table II.1: Grading Scheme

1. The program office will award the final grade to every student for each course after adjusting the grades provided by the faculty with the attendance record of the student.
2. The grading of students is relative to the performance of other students in the class. Individual evaluation components are graded numerically. Marks across the various components are aggregated to get total marks out of 100 marks. Grades are assigned to the students based on their relative performance across all students in the class.
3. The course grades awarded by the concerned faculties to the program office are treated as final. In case of any grievance regarding the grades awarded, a student can submit a written request to the program chairperson within one week from the announcement of the final grade by the program office. Usually, requests relating to totaling, omissions, and/or mistakes of clerical nature will only be entertained.
4. Students are cautioned not to approach faculty or teaching assistants requesting for changes in grades, marks, etc. Such actions will be viewed seriously, and strict disciplinary action will be initiated.
5. The Semester Grade Point Average (SGPA) is calculated by computing the sum of grade points in the respective courses multiplied by the course units, and dividing it by the total units for all the courses in the term. Similarly, the Cumulative Grade Point Average (CGPA) is calculated as a composite index of the academic performance of the student. Grades obtained in non-unit courses and audit courses are not considered for the calculation of CGPA. Both SGPA and CGPA will be provided in the grade sheets with three decimal accuracy.
6. Grades in each course may be converted to a percentage system based on the calculations as mentioned below:
    - If $3.50 \leq \text{CGPA} \leq 4.33$, then percentage = 91 + {(CGPA – 3.50) x 10.8434}
    - If $2.30 \leq \text{CGPA} \leq 3.50$, then percentage = 60 + {(CGPA – 2.30) x 25.8334}
    - If $2.00 \leq \text{CGPA} \leq 2.30$, then percentage = 50 + {(CGPA – 2.00) x 33.3334}
    - If $1.00 \leq \text{CGPA} \leq 2.00$, then percentage = 20 + {(CGPA – 1.00) x 30}
    - For example, if CGPA is 2.33, then the percentage equivalent would be 60 + {(2.33 – 2.30) x 25.8334} = 60.77%

3.11.1 Deficit Credit Points (DCP)

- Grades D and F obtained by a student are translated into DCP in the following manner:

Grade	Credits	Units	DCP earned
F	Not Relevant		6
D	0.5	0.25	1
	1	0.5	2
	1.5	0.75	3
	2	1	4
	2.5	1.25	5
	3	1.5	6

Table II.2: Deficit Credit Points System

3.11.2 Promotion from One Semester to the Next Semester

A student will be eligible for promotion from one semester to the next, based on the following criteria:

1. Obtain a CGPA of at least 2.0 (equivalent to C Grade).
2. If the CGPA is below 2.0, and/or the student has accumulated any DCPs by the end of any semester, the student will be given a warning and put on academic watchlist.

c) Promotion from First to Second Year

1. A student will be eligible for promotion from first to second year, based on the following criteria:
   a. Obtain a CGPA of at least 2.0 (equivalent to C Grade).
   b. Accumulate not more than 12 DCPs. If a student accumulates more than 12 DCPs at any point in the first year, the student will be asked to leave the program even if it is in the middle of the first year.
   c. Does not have any outstanding financial liabilities with the Institutes.
2. Students who are not eligible for promotion will be issued a letter informing them of the decision. A student may appeal against the decision to the program chairperson. The program chairperson will present the issue to the program committee, who will examine the performance of the student and present their case to the faculty council for inputs. The decision of the faculty council will be communicated to the student. The final appealing authority will be the Directors of IIM Amritsar and IIT Ropar. The decision of the appealing authority will be binding and conclusive.
3. In case a student is permitted to repeat the program, they will join the program in the year immediately after their expulsion. They will be subject to all conditions, including changes in fee structures, as applicable to the batch of the program in which they are joining. A student may be given the opportunity to repeat the program only once.
4. It is the responsibility of the students to maintain their attendance and academic performance throughout the two-year program.
5. If a student is asked to leave the program, or not promoted, or withdraws from the program, only the caution deposit, after deducting any outstanding financial liabilities, will be refunded to the student, upon applying for the same and no-dues-certificate.

4. Fees

4.1 Mode of Payment

(a) Institute dues

All Institute dues are to be paid through Demand Draft in favour of "IIT Ropar Fee account, IIT Ropar" payable at Ropar or through State Bank of India Internet Banking as available.

(b) Mess dues

Mess dues are to be paid by demand draft in favour of "The Director, IIT Ropar, Hostel Account" payable at Ropar or through internet Banking as available.

Deadlines for Payment

(a) Institute dues

(i) All Institute dues to be paid in full before the last date for Late Registration (this is typically one week after the first day of classes).

(ii) Students who do not pay the required amount by this date, or those who make partial payments, shall have their registration cancelled. Registration will be restored on payment of fees and a fine as stipulated in the Institute rules.

(iii) In case of new entrants, the fee has to be paid by demand draft on the day of registration at the time of joining the Institute.

(b) Mess dues

All Mess dues are to be paid on or before the date for Registration Validation, i.e. before thefirst day of classes.

4.2 Refund of Fees

The whole amount of fees/other charges deposited by the students will be refundable after deduction of Rs.1,000/, if the students do not join the programme after paying the dues and leave the Institute by applying for refund on or before the date of registration or as notified in the admission letter. No refund of fees will be permissible to students who have registered for the programme but leave immediately thereafter. In such cases, only security deposits will be refunded and that too only at the end of the semester.

4.3 GUIDELINES FOR CONTINUATION FEES DURING SEMESTER WITHDRAWAL

a. Wherever semester withdrawal for a student is approved as per the Institute rules, the semester fee is waived off for the student(s).
b. During the withdrawal period, a continuation fee of **Rs. 3000/- (Rupees Three Thousand Only)** will be charged to maintain his / her enrollment / registration in the Institute.

4.4 Withdrawal from the Institute (For PG students)

If a student is continuously absent from the Institute for more than four weeks without informing the Dean (Academics), his/her name will be removed from the Institute rolls. Such absence during the first year will render the student in eligible for re-admission. A student wishing to leave the Institute on his/her own should submit an application duly countersigned by his/her father/guardian. He/she shall also obtain "Clearance Certificate" from the Department, the Librarian, the Warden, the Officer Commanding, NCC, and the Accounts Section, and submit to the Academics Section(PG) for settling his/her accounts in the Accounts Section. The student shall remain liable to pay all dues till the date on which his/her name is formally struck off the Institute rolls.

4.11Transcripts, Degree and other Certificates

Additional transcripts, duplicate degrees/diplomas, etc can be obtained on payment of the following charges.

a) Degree in Person	In India	Rs. 1000
b) Degree in absentia		Rs. 1000
c) Degree in Person	In Abroad	Rs. 1000
d) Degree in absentia		Rs. 1500 or US $150

e) Migration Certificate		Rs. 500
f) Duplicate Degree Certificate	In India	Rs. 2500
	In Abroad	US $250
g) Transcripts	In India	Rs. 500
(1 Original + 4 attested copies)	In Abroad	US $ 50
h)Duplicate Identity Card		Rs.500
i) Certificate of medium of instruction in English (Only one original)	In India	Rs. 100
	In Abroad	US $ 100
j)Verification of degree certificate, membership of Institute bodies,	In India	Rs.1000+ Postal Charges
	In Abroad	US$100 + Postal Charges
k) Character Certificate (only one original)	In India	Rs. 100
	In Abroad	US $ 100

4.12 Procedure for Issue of Duplicate Degree Certificate / Grade Sheets from IIT Ropar.

The duplicate Degree certificate/Grade Sheets are issued only if the original Degree certificate/Grade Sheets are lost or stolen.

A. Procedure

The following procedure is to be adopted by the candidate for getting duplicate Degree certificate / Grade Sheets issued from IIT Ropar:

1. Lodge an FIR (First Information Report) for the same to the nearest Police Station.
2. Publish in the newspaper about the loss of the Degree certificate / Grade Sheets.
3. Provide an affidavit prepared by a Notary on a non-judicial stamp paper. (The matter to be printed on the affidavit is detailed below)
4. Write an application addressed to "The Dean (Academics), IIT Ropar" mentioning the loss of your degree and reference of the above documents.
5. Attach a photocopy of the original Degree certificate / Grades heets conferred on you by IIT Ropar (if available).

B. Charges

a. **For Duplicate Degree Certificate**: Candidate has to pay online an amount of Rs.2500/- (Rupees Two Thousand Five Hundred Only) in India or US$ 250 (US Dollar Two Hundred Fifty Only) in abroad.

b. **For Grade Sheet (for one or all grade sheet):** Candidate has to pay online an amount of Rs 2500/- (Rupees Rupees Two Thousand Five Hundred Only) in India or US$ 250 (US Dollar Two Hundred Fifty Only) in abroad

c. Postal Charges Extra**.**

d. **The following is the steps to be used for payment**:

a. Go to https://onlinesbi.sbi.bank.in/sbicollect/
b. Select SB Collect
c. Select state - Punjab
d. Select educational institute- IIT Ropar (Type I I T Ropar after giving space in each letter of I I T).
c. Select IIT Ropar (Institute name)
d. Select payment category: **FEE FOR DUPLICATE DEGREE CERTIFICATE / GRADESHEETS**
e. Entry our entry number and click on Fetch payment details
f. Fill the details and complete the payment procedure.
g. Please fill the correct Mobile number and email ID to get payment status.

C. Processing

Attach all the above documents in Original along with your application and send it at the following address:

Dean (Academics), Academic Section

East Wing, 2nd Floor,

M.Visvesvaraya Building

Indian Institute of Technology Ropar, Rupnagar-140001 (Punjab) INDIA

Kindly note that it takes approximately 15 working days from the day of receiving the above documents to process an application for the issuance of a duplicate Degree (this excludes postal time).

Proforma for Affidavit

(To be printed on a non-judicial stamp paper of Rs.50/-)

AFFIDAVIT

I,<NAME OF THE CANDIDATE>son of Shri.<NAME OF FATHER/MOTHER>,Resident of<PRESENT RESIDENTIAL ADDRESS>,hereby solemnly declare and affirm as under:

1. That, I was a student of Indian Institute of Technology Ropar from<MONTH & YEAR> till <MONTH & YEAR>.

2. That, I appeared and passed < NAME OF THE PROGRAMME> the Degree in <NAME OF BRANCH> from Indian Institute of Technology Ropar in the year <GRADUATING YEAR>.

3. That, the original< NAME OF THE PROGRAMME>Degree Certificate / Grade Sheets conferred upon me by the Indian Institute of Technology Ropar has actually been lost and to the best of my knowledge and belief, there is no immediate likelihood of the said original certificate being traced out.

4. That, in the unlikely event of the original degree certificate ever getting found, will not be misused.

Deponent

Verification

Verified that the contents of this affidavit are true and correct to the best of my knowledge and belief and nothing has been concealed therein.

Date:<DATE OF WRITING AFFIDAVIT>

Place:<CURRENT CITY OF YOUR STAY>

Deponent

4.13 Details of Semester Fees for Indian Nationals for the Academic Year 2026-27

	PG FEE STRUCTURE						
Sr. No.	**Particulars**	**M. Tech/ M.S. (GEN/ OBC)**	**M. Tech/ M.S. (SC/ ST)**	**M. Tech (Sponsored)**	**M. Tech (Part Time-Instt. Staff)**	**M.Sc (GEN/ OBC/EWS)**	**M.Sc (SC/ ST)**
1	**SEMESTER FEES**	**(INR)**	**(INR)**	**(INR)**	**(INR)**	**(INR)**	**(INR)**
	i)Tuition Fee	9375	0	27565	27565	6615	0
	ii) **Academic Fees**	1330	1330	1330	1330	1330	1330
	Other fees	9265	9265	9265	0	9265	9265
	iii) Hostel fees	5845	5845	5845	0	5845	5845
	TOTAL (Semester Fees to be paid)	**25815**	**16440**	**44005**	**28895**	**23055**	**16440**
2	**ONE TIME PAYMENTS (Non-Refundable)** To be paid at the time of admission.	6405	6405	6405	3970	6405	6405
3	**Deposits (Refundable)** Institute and Library security deposits	11030	11030	11030	0	11030	11030
4	**OTHERPAYMENTS** Insurance scheme (to be paid every year in 1stsemester)	830	830	830	0	830	830
	TOTAL FEES	**44080**	**34705**	**62270**	**32865**	**41320**	**34705**

The fee payable at IIT Ropar is subject to change as per the Institute rules.

The fees will increase from AY 2026-27 onwards at the rate of inflation (i.e CPI/Inflation Indexes published by Govt. of India) subject to minimum increase @5% every academic year.

Note:1) The Hostel Fees are exempted for the students of M.S. who do not reside in the hostel.

2) Mess charges will be notified separately.

4.14Semester Fees for Foreign Nationals will be same as per Indian Nationals

4.15HOSTEL/MESS FEES :To be notified separately

*subject to revision in every semester.

Please Note: The students are required to pay the Hostel/Mess Fees every semester.

4.16Fellowships & Scholarships

4.16.1 Fellowships for M.Tech Students

Qualifying Degree	Fellowship Amount	Hours/week Teaching Assistance
B.E./B.Tech./BS/B.Des and GATE/GPAT qualified	Rs.12,400/-p.m. (Both1st and 2nd year and 5th year of Dual Degree Programmes.	8 hrs/week

The above is subject to change as per MoE guidelines

- The maximum duration for which Fellowship can be awarded to M.Tech students is 4 semesters.
- Only full-time non-sponsored students who have qualified GATE are eligible for Fellowship.
- In the first instance, the assistantship is awarded only for one semester. There after continuation of the assistantship during each semester is contingent upon satisfactory.
- Academic performance and satisfactory performance in the discharge of responsibilities assigned under the assistantship scheme. For this purpose an SGPA of not less than 5.00 at the end of the semester is treated as satisfactory academic performance.
- Candidates qualified for CSIR JRF will not be allowed to avail fellowship for doing M.Tech programmes. However, they can avail the CSIR fellowship for doing the PhD programme.

4.16.2 Merit-cum-Means scholarship to M.Sc. students

The M.Sc. students are eligible for Merit-cum-Means scholarship (MCM) in the form of tuition fee waiver and monthly pocket allowance on the following terms and conditions. The students are exempted from paying tuition fee and will further receive a pocket allowance of Rs.1000/-per month at par with B.Tech. students.

M.Sc. students will be eligible to receive MCM in the first semester based on All India Ranking JAM. The scholarship will be renewed/continued on semester to semester basis until he/she clears all academic requirements of the programme, provided that he/she continues to satisfy the eligibility and continuation criteria. This is continuation of MCM, the performance of the student will be reviewed at the end of each semester.

Criteria for Continuation:

1. CGPA must be 6.0 or more; and
2. Earned credit requirement. (Each department will notify the no. of credits required to be registered by the students and number of credits to be passed)
3. SGPA in the previous semester must be 6.0 or more.

   Only those students are eligible whose parents have a gross yearly income upto Rs.4.5 lac per annum or as notified by Govt.of India from time to time.

4.16.3 Financial Aid and Student Loans

The PM-Vidyalaxmi Scheme, a Government of India initiative offering collateral-free and guarantor-free education loans is available for all meritorious students who are getting admission in this Institution and who are desirous of availing education loans to pursue higher education. You can visit the portal https://pmvidyalaxmi.co.in. The portal does not charge any amount from the applicant. Through the portal, you can:

- Apply to multiple banks for education loan,
- Access collateral-free and guarantor-free education loans,
- Benefit of interest subsidies available to eligible students as per schemes guidelines accessible at https://www.education.gov.in/sites/upload_files/mhrd/files/document- reports / PM _Vidyalaxmi_Scheme_Guidelines.pdf
- To address queries raised by the students, there is a dedicated Toll-free number 1800-1031."

5. Discipline and Attendance

5.1 Discipline

(a) Students are expected to dress and to conduct themselves in a proper manner.

(b) All forms of ragging are prohibited. If any incident of ragging comes to the notice of the authorities, the student concerned shall be given the opportunity to explain. If the explanation is not found to be satisfactory, the authorities can expel him/her from the Institute.

(c) The students are expected to conduct themselves in a manner that provides a safe working environment for women. Sexual harassment of any kind is unacceptable and will attract appropriate disciplinary action.

2.8 Punishment to the students who indulge in unfair means during quizzes/mid semester/ end-semester examinations.

The following graded punishments will be imposed on those who indulge in Academic Mal-practices —unfair means during Mid-semester/End-semester examinations:

(a) For rude behaviour

(i) Severe warning shall be issued to a student who is found to display rude behavior towards fellow students/invigilators.

(ii) The student is liable to be expelled from the examination hall.

(iii) In such cases, the parents of that student would be informed of such indiscipline.

(b) Malpractices and corresponding Punishments

Sr No	Nature of Malpractice	Recommended Punishment
1.	Communicating with neighbours in the Examination hall.	The erring student(s) shall be awarded `F' grade in the subject concerned.
2.	Possessing incriminating* materials inside the examination hall. (or)	The Disciplinary Committee shall have the discretion to recommend one of the following punishments:

	Possessing the answer book of another candidate. (or) Passing on answer book to another student. (or) Exchange of question papers, with some answers noted down on them. (or) Individual referral of material /discussion with other students, during visit outside the examination hall.	(a) The erring students(s) shall be awarded 'F' grade in the subject concerned. (or) (b) The erring student(s) shall bea warded 'F' grade in the subject concerned and one grade less in all the other subjects in the concerned semester. (or) (c) The concerned student(s) shall be awarded `F' grade in all the subjects in the concerned semester.
3.	Involved in malpractice in the examination for these condtime, in a premeditated manner.	The concerned student i) shall be awarded 'F' grade in all subjects, in the concerned semester and ii) shall be debarred from attending classes and taking examinations in the subsequent semester.
4.	Impersonation in the examination.	The concerned student i) shall be awarded `F' grade in all subjects, in the concerned semester and ii) shall be debarred from attending classes and taking examinations in the next two subsequent semesters.

(*incriminating materials include written/printed material; unauthorized additional sheets without or with write-ups, bits, scribbles on scales / handkerchief / on the body; abuse of calculator/organizer/cellphone,etc.)

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6. The Honour Code

I,……Entry……

Do hereby undertake that as a student of IITRopar, Punjab:

1. I will not give or receive aid in examination; that I will not give or receive unpermitted aid in classwork, in preparation of reports or in other work that is to be used by the instructor as the basis of grading; and
2. I will do my share and take an active part in seeing to it that others as well as I uphold the spirit and letter of the Honour Code.
3. I realize that some examples of misconduct which are regarded as being inviolation of the Honour Code include:

- Copying from an other's examination paper or allowing another to copy from one's own paper;
- Unpermitted collaboration;
- Plagiarism;
- Revising and resubmitting a marked quiz or examination paper for regarding without the instructor's knowledge and concern;
- Giving or receiving unpermitted aid on take home examination;
- Representing as one's own work the work of another, including information available on the internet;
- Giving or receiving aid on academic assignments under circumstances in which a responsible person should have known that such aid was not permitted ;and
- Committing a cyber offence such as breaking passwords and accounts, sharing passwords, electroni ccopying, planting viruses, etc.

I accept that any act of mine that can be considered to be an Honour Code violation will invite disciplinary action.

Date:……..

Student's Signature……

Name:……

Entry No……

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7. Academic Integrity

1. Cases of ethical lapses emanating from institutions of scientific research are increasingly being reported in the news. In this context, we need to create awareness and come up with a set of clear guidelines to maintain academic integrity. A flourishing academic environment entails individual and community responsibility for doing so. The three broad categories of improper academic behavior that will be considered are: I) plagiarism, II) cheating and III) conflict of interest.

2. Cases of ethical plagiarism are the use of material, ideas, figures, code or data without appropriate acknowledgment or permission (in some cases) of the original source. This may involve submission of material, verbatimorpara phrased, that is authored by another person or published earlier by oneself. Examples of plagiarism include:

(a) Reproducing, in whole or part, text/sentences from a report, book, thesis, publication or internet.

(b) Reproducing one's own previously published data, illustrations, figures, images, or someone else's data, etc.

(c) Takingmaterialfromclass-notesordownloadingmaterialfrominternetsites,andincorporating it in one's class reports, presentations, manuscripts or thesis without citing the original source.

(d) Self-plagiarism, which constitutes copying verbatim from one's own earlier published work in a journal or conference proceedings without appropriate citations.

The resources given in Subsection (8) explain how to carry out proper referencing, as well as examples of plagiarism and how to avoid it.

3. Cheating is another form of unacceptable academic behavior and may be classified in to different categories:

(a) Copying during exams, and copying of homework assignments, term papers or manuscripts.

(b) Allowing or facilitating copying, or writing a report or exam for someone else.

(c) Using unauthorized material, copying, collaborating when not authorized, and purchasing or borrowing papers or material from various sources.

(d) Fabricating (making up) or falsifying (manipulating) data and reporting them in thesis and publications.

4. Some guidelines for academic conduct are provided below to guard against negligence as well as deliberated is honesty:

(a) Use proper methodology for experiments and computational work. Accurately describe and compile data.

(b) Carefully record and save primary and secondary data such as original pictures, instrument data readouts, laboratory notebooks, and computer folders. There should be minimal digital manipulation of images/photos; the original version should be saved for later scrutiny, if required, and the changes made should be clearly described.

(c) Ensure robust reproducibility and statistical analysis of experiments and simulations. It is important to be truthful about the data and not to omit some data points to make an impressive figure (commonly known as “cherry picking”).

(d) Lab notebooks must be well maintained in bound notebooks with printed page numbers to enable checking later during publications or patent. Date should be indicated on each page.

(e) Write clearly in your own words. It is necessary to resist the temptation to “copy and paste' from the Internet or other sources for class assignments, manuscripts and thesis.

(f) Give due credit to previous reports, methods, computer programs etc. with appropriate citations. Material taken from your own published work should also be cited; as mentioned above, it will be considered self-plagiarism otherwise.

5. A clash of personal or private interests with professional activities can lead to a potential conflict of interest, in diverse activities such as teaching, research, publication, work on committees, research funding and consultancy. It is necessary to protect actual professional independence, objectivity and commitment, and also to avoid an appearance of any impropriety arising from conflicts of interest. Conflict of interest is not restricted to personal financial gain; it extends to a large gamut of professional academic activities including peer reviewing, serving on various committees, which may, for example, oversee funding or give recognition, as well as influencing public policy. To promote transparency and enhance credibility, potential conflicts of interests must be disclosed in writing to appropriate authorities, so that a considered decision can be made on a case-by-case basis. Some additional information is available in the section below dealing with resources.

6. The responsibility varies with the role one plays.

(a) Student roles: Before submitting a thesis to the department, the student is responsible for checking the thesis for plagiarism using software that is available on the web. In addition, the student should certify that they are aware of the academic guidelines of the institute, have checked their document for plagiarism, and that the thesis is original work. A web-check does not necessarily rule out plagiarism.

(b) Faculty should ensure that proper methods are followed for experiments, computations and theoretical developments, and that data are properly recorded and saved for future reference. In addition, they should review manuscripts and theses carefully. Apart from the student certification regarding a web-check for plagiarism for theses, the Institute will provide some commercial software at SERC for plagiarism checking. Faculty members are encouraged to use this facility for checking reports, theses and manuscripts. Faculty members are also responsible for ensuring personal compliance with the above broad issues relating to academic integrity.

(c) A breach of academic integrity is a serious offence with long lasting consequences for both the individual and the institute, and this can lead to various sections. In the case of a student, the first violation of academic breach will lead to a warning and/or an “F” course

grade. A repeat offence, if deemed sufficiently serious, could lead to expulsion. It is recommended that faculty members bring any academic violations to the notice of the Department Chairman. Upon receipt of reports of scientific misconduct, the Director may appoint a committee to investigate the matter and suggest appropriate measures on a case to case basis.

7. The Indian Institute of Technology Ropar will own the Intellectual Property (IP) made or created by any student carrying out research under the supervision of any employee of the Institute, or the IP developed individually by the student in the course of his/her studies at IIT Ropar, or with any use of IIT Ropar facilities. By accepting admission to IIT Ropar, a student agrees to assign to the IIT Ropar all such IP made or created at IIT Ropar, including inventions and copyright-able material; and to execute all papers required to assign, apply for, obtain, maintain, issue and enforce IP and IP rights.

8. References:

National Academy of Sciences article "On being a scientist,"

I. http://www.nap.edu/openbook.php?record_id=4917&page=RI

ii. http://www.admin.cam.ac.uk/univ/plagiarism/

iii. http://www.aresearchguide.com/6plagiar.html

iv. https://www.indiana.edu/~tedfrick/plagiarism

v. http://www.files.chem.vt.edu/chem-ed/ethics/index.html

vi. http://www.ncusd203.org/central/html/where/plagiarism_stoppers.html

vii. http://sja.ucdavis.edu/files/plagiarism.pdf

viii. http://web.mit.edu/academicintegrity/

ix. http://www.northwestern.edu/provost/students/integrity/

x. http://www.ais.up.ac.za/plagiarism/websources.htm#info

xi. http://ori.dhhs.gov/

xii. http://www.scientificvalues.org/ceses.html

8. Library Facilities

The Nalanda Library, IIT Ropar is an invaluable storehouse of knowledge and learning resources, which plays a fundamental and advance role in support of various academic and research activities at the institute. The objective of the library is to provide users with the required information resources and support by offering latest services which are integrated with teaching, learning and research activities. Apart from textbooks and recommended reading materials prescribed for each course offered at the institute, the library houses a growing collection of research monographs, reports, multi-volume reference works, dictionaries, encyclopedias, handbooks, and so on. The Library also possesses a substantial collection of theses, dissertations, and annual reports, standards in the field of science, engineering, technology, humanities and social sciences. The library facilitates access to electronic journals through its participation in consortia, such as E-Shodh Sindhu (eSS). The library also subscribes to several e-journals directly from publishers as well as through reputed subscription agencies. At present, users can consult more than 25,000+ books (available on shelves) and thousands of electronic books, e-journals. The library provides online access to a range of specialized databases, including economic and political databases such as Prowess IQ and CMIE States of India, as well as scientometric databases like Scopus, Math SciNet, and Web of Science. To support researchers in enhancing scientific writing skills and ensuring the originality of their research work, the library provides online access to tools such as Overleaf, Grammerly and the Turnitin.

The library circulation operations have been automated using RFID-based LMS-KOHA software. The Online Public Access Catalogue (OPAC) which is on the public domain enables users to search documents in possession of the library. The library is using the Radio Frequency Identification Technology (RFID), a state-of-the-art auto-identification technique that helps in self-servicing and enhanced security. A dedicated e-resources section is provided in the library to browse CDs and DVDs of books, theses, and dissertations. Additionally, the library has established an Institutional Digital Repository (IDR) using open source DSpace software to archive and provide online access to the intellectual output of the institute. IDR is available publicly which facilitates the dissemination of scholarly work while promoting institutional visibility. To further enhance resource accessibility, the library has developed a web-based Subject/Research Guide using the Subject plus tool. The guide enables users to explore comprehensive library resources based on subject areas or research interests, including e-journals, books/e-books, databases, and theses/dissertations.

9. HealthCare

Medical Centre (24x7)

The Institute Medical Centre is located in the Utility Block in Main Campus. The Medical Centre consists of dedicated full time Medical Officers, Visiting Specialists and Para-Medical staff (Pharmacists and Nursing Staff) which have been appointed to provide the medical services to Students, Faculty, Staff and their dependents. Medical Centre provides Routine OPD, Day Care, First-Aid & 24x7 Emergency Services. There are two Ambulances with basic life support available 24x7 for medical emergencies and for referral services to the higher centres. In addition, the Institute empanelled various Multi and Super Speciality hospitals in the city of Ropar, Mohali and Chandigarh for providing the Secondary and Tertiary medical care to the clientele of IIT Ropar.
Medical Centre aims to enhance the healthcare experience of the IIT Ropar campus community by providing healthcare with respect, consideration and confidentiality.

10. Hostels and Dining Facilities

The Institute campus has four boys hostels (Satluj, Beas, Chenab, Brahmaputra) and 3 girl hostels (Raavi, Brahmaputra, T6) with a total capacity of 2984 available at the main campus. All hostels are well furnished along with common rooms for recreational activities for each hostel. The campus also has an expansive and airy common dining area. All hostels are provided with excellent drinking water facilities. Each hostel has common facilities - indoor, recreation and games. The hostel complex also includes a few shops that cater to the basic needs of the residents. IIT Ropar also provides gymnasium facilities within its campus for its students. Lush green IIT campus add enormous fuel in the daily life of the students. We have lively and enchanting campus life wherein the students are provided with all the amenities for the recreational activities. Here at IIT Ropar, students rejuvenate their hidden talent and relive their hobbies. State of the art classrooms with Audio visual aids and state of the art laboratories with latest research facilities enhance the teaching learning process while high-tech library with tremendous books, journals, periodicals etc. help them to connect with the entire world of information and knowledge. We have also introduced drastic changes to the mess menu with detailed options given to students w. r. t. the food items they would like to have in the Mess by fixing the base menu and providing extra items in the menu which they student can opt for at an extra cost. At IIT Ropar, students relish research and extracurricular activities to grow as an aspiring engineer with moral and ethical integrity.

***Note: Hostel accommodation will be provided on a sharing basis only depending upon the availability.**

11. Student Activities

The Institute has a Society for Publication and Communication Skills Development. In addition, there are Music, Dance, Dramatics, Arturo, Fine Arts, Literary clubs and also Science & Technology, Robotic Societies, Monochrome, Computer Integrated Manufacturing, Astronomy, Quiz, Coding clubs where the students can participate and develop a well– rounded personality.

Recreational/Extra Curricular activities

In order to take care of various students activities, we have a Student Affairs Section with the following functional units:

1. Board of Hostel Affairs (BOHA)
2. Board of Cultural Activities (BOCA)
3. Board of Science & Technology (BOST)
4. Board of Sports Activities (BOSA)
5. Board of Literary Activities (BOLA)
6. Board of Academic Affairs (BOAA)
7. Board of Wellness Affairs (BOWA)
8. Institute Student Mentorship Program (ISMP)
9. Outdoor Adventure and Social Activities Club (ODAC)
10. National Service Scheme (NSS)

Board of Hostel Affairs (BOHA)

The Board of Hostel Affairs (BOHA) oversees all hostels and mess facilities at the institute, ensuring a comfortable and well-managed residential experience for students. It monitors food quality, menu planning, and overall mess operations through the Mess Committee. For hostel-related concerns, the Hostel Committee addresses student issues and works towards improving hostel life. BOHA also organizes cultural celebrations, special dinners, and various activities to enhance student engagement. A major highlight is the General Championship (GC), a prestigious inter-hostel competition that fosters camaraderie and competitive spirit. All these activities are managed under the leadership of the General Secretary, BOHA.

Board of Cultural Activities (BOCA)

The Board of Cultural Activities (BOCA) at IIT Ropar is the heart of the institute's cultural scene, fostering artistic expression and vibrant student engagement. It oversees a diverse array of clubs, including Alankar (Music Club), Arturo (Photography Club), D'Cypher (Dance Club), Epicure (Culinary Club), Undekha (Dramatics Club), Vibgyor (Fine Arts Club), and Panache (Fashion Club). Throughout the year, BOCA organizes exciting events like jamming nights, Bhangra sessions, ramp walks, and street plays, ensuring a lively campus atmosphere. The flagship event, Zeitgeist, is IIT Ropar's annual cultural fest, featuring renowned celebrities, musicians, and comedians, drawing immense participation. BOCA also proudly represents IIT Ropar at the Inter-IIT Cultural Meet, held every December, where students compete against peers from all 23 IITs in a prestigious display of talent and creativity. Through these initiatives, BOCA not only enriches the cultural landscape on campus but also fosters leadership, teamwork, and artistic excellence.

Board of Science And Technology(BOST)

The Board of Science and Technology at IIT Ropar is a vibrant hub of innovation, comprising 11 dynamic clubs—Aeromodelling, Automotive, CIM, Coding, Fincom, Robotics, Softcom, Zenith, Esportz, Monochrome, and Softcom. We explore diverse domains, including mechatronics, software development, cybersecurity, game development, and competitive coding, fostering a culture of technical excellence. Our board extends its reach into high-power model rocketry, astronomy, esports, computational simulations, and design, pushing the boundaries of scientific exploration. We also focus on case studies, quantitative finance, and advanced computational techniques, providing students with real-world problem-solving skills. Engaging in national and international competitions, we showcase our expertise on global platforms. From cutting-edge robotics and automation to financial modeling and digital art, our clubs cater to every tech enthusiast. With hands-on projects, workshops, and mentorship, we empower students to innovate and lead in the evolving technological landscape.

Board of Sports Activities (BOSA)

We have a Board of Sports Activities (BOSA) which encourages the students to participate in local / Inter- / Intra-college / Hostel Sports Activities to boost their performance in inter IIT Sports meet under the guidance of Sports Officer & professional coaches.

All sports facilities including gymnasium are being upgraded to enhance the quality of facilities at the Institute. There are international level modern sports fields / grounds with floodlights facilities. Since 2016, BOSA, IIT Ropar is organizing an Annual Sports Festival "AAROHAN" in which students of various Colleges, Institutes and Universities participate in more than 13 sports events.

Board of Literary Affairs (BOLA)

The Board of Literary Affairs at IIT Ropar is dedicated to nurturing and promoting literary excellence and creativity within the campus. It oversees and organizes all literary activities, providing a vibrant platform for students to explore and showcase their talents. Under its umbrella, the board hosts various clubs, including poetry, quizzing, debating, oratory, filmmaking, Model United Nations (MUN), and a movie club, catering to diverse literary and artistic interests. Additionally, it proudly organizes MALHAR, the annual literary fest of IIT Ropar, which celebrates the spirit of literature, culture, and expression through a series of exciting events, competitions, and interactive sessions, fostering a dynamic and intellectually stimulating environment for the student community.

Board of Academic Affairs (BOAA)

The Board of Academic Affairs (BOAA) acts as a crucial link between students and the administration, focusing on addressing academic concerns effectively. With representatives from all branches of each year, BOAA ensures clear communication between students and professors. It advocates for student interests, influencing positive changes in academic policies. The board plays a vital role in improving the overall academic experience, aiming to create a supportive environment where every student's voice matters. Its efforts promote collaboration and address challenges to enhance learning throughout the college community.

Board of Wellness Affairs (BOWA)

The Boards caters the mental health and counseling needs of the students, faculties and staff. Our system is especially working towards addressing the psychological difficulties of the students and promoting the wellness among the whole campus community. Our main focus is to create a proactive and preventative environment for mental health care of all. The objective of this cell is to increase the help seeking behavior among the community, and to remove the fear of stigma by close others and to make the counseling services more user friendly.

There is another unit working in coordination with Board of Wellness Affairs i.e. a Counselling Cell named as "Snehita Wellbeing Cell". This cell conducts various educational activities/sessions for student's well-being like – Dealing with Academic Anxiety, Self Discipline & Wellbeing, Time Management, Power of Happiness, Relaxation Exercises & Mindfulness etc. Snehita Buddies have been constituted to address the stress related concerns of students under Snehita Wellbeing Cell.

Institute Student Mentorship Program (ISMP)

The Institute Student Mentorship Program (ISMP) at IIT Ropar is a student-driven initiative designed to help fresher's adapt to college life. It provides guidance on academics, co-curricular activities, and maintaining a balanced lifestyle. Each fresher is assigned a mentor, a carefully selected senior student who offers support and advice throughout the year. ISMP ensures a smooth transition into IIT Ropar by organizing interactive sessions, activities, and events that introduce fresher's to the campus culture. The program fosters a strong support system, encouraging personal and academic growth. Through mentorship, fresher's gain insights, resources, and confidence to make the most of their college journey.

Outdoor Adventure And Social Activities Club (ODAC)

The Club organizes events specifically designed to help students, faculty, and staff members improve their fitness and overall well-being. Every year, on occasions such as National Unity Day, Yoga Day, and others, the club organizes events like the IIT Ropar Unity Run, Yoga Day in coordination with the Board of Sports Affairs, the celebration of Bicycling Day, and the Holy Run, among others.

NSS (National Service Scheme)

With the goal to work for the betterment of society and instill the spirit of social service among the young students, IIT Ropar established NSS at institute level, headed by Faculty in Charge, IIT Ropar. Currently, NSS, IIT Ropar has over 100 active members from different disciplines, working rigorously for community health care, literacy drives, and environmental protection. Blood donation camps, informative lecture on human values are organized regularly. The aim of the organization is to produce engineers, who are socially responsible, and work for the development of nation.

12. General Facilities

The Institute has a branch of SBI as well as a Post office to cater to the needs of the faculty members, staff and students.

13. Details of Medals

Name of the Medal	Criteria for Award
Institute Silver Medal (For each programme)	• The candidate has not failed in any subject at any stage during his/her academic career till the time of the award. • No disciplinary action has been taken against him/ her for any offence at any time prior to the award. • The candidate has not been punished under examination malpractice and involved in violation of code of conduct at any stage of the course in the Institute/ Hall of Residence/Department/ Gymkhana, etc.

A student is eligible for the award of medal if:

1. He/ she has not failed in any subject at any stage during his/her academic career till the time of the award.
2. No disciplinary action has been taken against him/ her for any offence at any time prior to the award.
3. He/ she has not been punished under examination malpractice and involved in violation of code of conduct at any stage of the course in the Institute/ Hall of Residence/ Department/ Gymkhana, etc.

[Resolution no. S25/R6/17/304 of 25th Senate dated 24.11.2017]

14. Academic Calendar for the1st Semester of Academic Year 2026-27: Please visit

https://www.iitrpr.ac.in/downloads/sites/default/files/Final%20Academic%20Calendar_For%20website.pdf

15. UGC REGULATION ON CURBING THE MENACE OF RAGGING IN HIGHER EDUCATIONALINSTITUTIONS, 2009

In exercise of the powers conferred by Clause (g) of Sub-Section (I) of Section 26 of the University Grants Commission Act, I956, the University Grants Commission hereby makes the following Regulations, namely -

1. Title, commencement and applicability: -

1.1.These regulations shall be called the "UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009".

1.2. They shall come into force with immediate effect.

1.3. They shall apply to all the universities established or incorporated by or under a Central Act, a Provincial Act or a State Act, to all institutions deemed to be university under Section 3 of the UGC Act, 1956, to all other higher educational institutions, including the departments, constituent units and all the premises (academic, residential, sports, canteen, etc) of such universities, deemed universities and other higher educational institutions, whether located within the campus or outside, and to all means of transportation of students whether public or private.

2. Objective:-

To root out ragging in all its forms from universities, colleges and other educational institutions in the country by prohibiting it by law, preventing its occurrence by following the provisions of these Regulations and punishing those who indulge in ragging as provided for in these Regulations and the appropriate law in force.

3. Definitions:-For the purposes of these Regulations:-

3.1."college" means any institution, whether known as such or by any other name, which provides for a programme of study beyond 12 years of schooling for obtaining qualification from a university and which, in accordance with the rules and regulations of such university, is recognized as competent to provide for such programme of study and present students undergoing such programme of study for the examination for the award of such qualification.

3.2. "Head of the institution" means the 'Vice-Chancellor' in case of a university/deemed to be university, 'Principal' in case of a college, 'Director' in case of an institute

3.3. "institution" means a higher educational institution (HEI), like a university, a college,an institute, etc. imparting higher education beyond 12 years of schooling leading to a degree (graduate, postgraduate and/or higher level) and/or to a university diploma.

3.4. "Ragging" means the following:

Any conduct whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness any other student, indulging in rowdy or undisciplined activities which causes or is likely to cause annoyance, hardship or psychological harm or to raise fear or apprehension thereof in a fresher or a junior student or asking the students to do any act or perform something which such student will not in the ordinary course and which has the effect of causing or generating a sense

of shame or embarrassment so as to adversely affect the physique or psyche of a fresher or a junior student.

3.5. "Statutory/Regulatory body" means a body so constituted by a Central/ State Government legislation for setting and maintaining standards in the relevant areas of higher education, such as the All India Council for Technical Education (AICTE), the Bar Council of India (BCI), the Dental Council of India(DCI),the Distance Education Council(DEC),the Indian Council of Agricultural Research (ICAR), the Indian Nursing Council (INC), the Medical Council of India (MCI), the National Council for Teacher Education (NCTE), the Pharmacy Council of lndia (PCI), etc. and the State Higher Education Councils.

3.6. "University" means a university established or incorporated by or under a Central Act, a Provincial Act or a State Act, an institution deemed to be university under Section 3 of the UGC Act, 1956, or an institution specially empowered by an Act of Parliament to confer or grant degrees.

4. Punishable ingredients of Ragging:-

- Abetment to ragging;
- Criminal conspiracy to rag;
- Unlawful assembly and rioting while ragging;
- Public nuisance created during ragging;
- Violation of decency and morals through ragging;
- Injury to body, causing hurt or grievous hurt;
- Wrongful restraint;
- Wrongful confinement;
- Use of criminal force;
- Assault as well as sexual offences or unnatural offences;
- Extortion;
- Criminal trespass;
- Offences against property;
- Criminal intimidation;
- Attempts to commit any or all of the above mentioned offences against the victim(s);
- Physical or psychological humiliation;
- All other offences following from the definition of "Ragging".

5. **Measures for prohibition of ragging at the institution level:-**

5.1 The institution shall strictly observe the provisions of the Act of the Central Government and the State Governments, if any, or if enacted, considering ragging as a cognizable offence under the law on a par with rape and other atrocities against women and ill-treatment of persons belonging to the SC/ST, and prohibiting ragging in all its forms in all institutions.

5.2 Ragging in all its forms shall be totally banned in the entire institution, including its departments, constituent units, all its premises (academic, residential, sports, canteen, etc) whether located within the campus or outside and in all means of transportation of students whether public or private.

5.3 The institution shall take strict action against those found guilty of ragging and/or of abetting ragging.

6.Measures for prevention of ragging at the institution level: -

6.1 Before admissions: -

6.1.1 The advertisement for admissions shall clearly mention that ragging is totally banned in the institution, and anyone found guilty of ragging and/or abetting ragging is liable to be punished appropriately (for punishments, ref section 8 below).

6.1.2 The brochure of admission/instruction booklet for candidates shall print in block letters these Regulations in full (including Annexures).

6.1.3 The 'Prospectus' and other admission related documents shall incorporate all directions of the Supreme Court and /or the Central or State Governments as applicable, so that the candidates and their parents/ guardians are sensitized in respect of the prohibition and consequences of ragging. If the institution is an affiliating university, it shall make it mandatory for the institutions under it to compulsorily incorporate such information in their 'Prospectus'.

6.1.4 The application form for admission/ enrolment shall have a printed undertaking, preferably both in English/Hindi and in one of the regional languages known to the institution and the applicant (English version given in Annexure I, Part I), to be filled up and signed by the candidate to the effect that he/she is aware of the law regarding prohibition of ragging as well as the punishments, and to the effect that he/she has not been expelled and/or debarred from admission by any institution and that he/she, if found guilty of the offence of ragging and/or abetting ragging, is liable to be punished appropriately.

6.1.5 The application form shall also contain a printed undertaking, preferably both in English/Hindi and in one of the regional languages known to the institution and the parent/ guardian (English version given in Annexure I, Part II), to be signed by the parent/ guardian of the applicant to the effect that he/ she is also aware of the law in this regard and agrees to abide by the punishment meted out to his/ her ward in case the latter is found guilty of ragging and/or abetting ragging.

6.1.6 The application for admission shall be accompanied by a document in the form of the School Leaving Certificate/Transfer Certificate/ Migration Certificate/ Character Certificate which shall include a report on the behavioral pattern of the applicant, so that the institution can thereafter keep intense watch upon a student who has a negative entry in this regard.

6.1.7 A student seeking admission to the hostel shall have to submit additional undertaking in the form of Annexure I(both Parts) along with his/ her application for hostel accommodation.

6.1.8 At the commencement of the academic session the Head of the Institution shall convene and address a meeting of various functionaries/agencies, like Hostel Wardens, representatives of students, parents/ guardians, faculty, district administration including police, to discuss the measures to be taken to prevent ragging in the Institution and steps to be taken to identify the offenders and punish them suitably.

6.1.9 To make the community at large and the students in particular aware of the dehumanizing effect of ragging, and the approach of the institution towards those indulging in ragging, big posters (preferably multicolored with different colours for the provisions of law, punishments, etc.) shall be prominently displayed on all Notice Boards of all departments, hostels and other buildings as well as at vulnerable places. Some of such posters shall be of permanent nature in certain vulnerable places.

6.1.10 The institution shall request the media to give adequate publicity to the law prohibiting ragging and the negative aspects of ragging and the institution's resolve to ban ragging and punish those found guilty without fear or favour.

6.1.11 The institution shall identify, properly illuminate and man all vulnerable locations.

6.1.12 The institution shall tighten security in its premises, especially at the vulnerable places. If necessary, intense policing shall be resorted to at such

points at odd hours during the early months of the academic session.

6.1.13 The institution shall utilize the vacation period before the start of the new academic year to launch wide publicity campaign against ragging through posters, leaflets. seminars, street plays, etc.

6.1.14 The faculties/ departments/ units of the institution shall have induction arrangements (including those which anticipate, identify and plan to meet any special needs of any specific section of students) in place well in advance of the beginning of the academic year with a clear sense of the main aims and objectives of the induction process.

6.2 On admission:-

6.2.1 Every fresh student admitted to the institution shall be given a printed leaflet detailing when and to whom he/she has to turn to for help and guidance for various purposes (including Wardens, Head of the institution, members of the anti-ragging committees, relevant district and police authorities), addresses and telephone numbers of such persons/authorities, etc., so that the fresher need not look upto the seniors for help in such matters and get indebted to them and start doing things, right or wrong, at their behest. Such a step will reduce the freshers dependence on their seniors.

6.2.2 The institution through the leaflet mentioned above shall explain to the new entrants the arrangements for their induction and orientation which promote efficient and effective means of integrating them fully as student.

6.2.3 The leaflet mentioned above shall also inform the freshers about their rights as bona fide students of the institution and clearly instructing them that they should desist from doing anything against their will even if ordered by the seniors, and that they have nothing to fear as the institution cares for them and shall not tolerate any atrocities against them.

6.2.4 The leaflet mentioned above shall contain a calendar of events and activities laid down by the institution to facilitate and complement familiarization of freshers with the academic environment of the institution.

6.2.5 The institution shall also organize joint sensitization programmes of' freshers' and seniors.

6.2.6 Freshers shall be encouraged to report incidents of ragging, either as victims, or even as witnesses.

6.3 At the end of the academic year:-

6.3.1 At the end of every academic year the Vice-Chancellor/ Dean of Students Welfare/ Director/ Principal shall send a letter to the parents/ guardians of the students who are completing the first year informing them about the law regarding ragging and the punishments, and appealing to them to impress upon their wards to desist from indulging in ragging when they come back at the beginning of the next academic session.

6.3.2 At the end of every academic year the institution shall form a 'Mentoring Cell' consisting of Mentors for the succeeding academic year. There shall be as many level sortiers of Mentors as the number of batches in the institution, at the rate of 1 Mentor for 6 freshers and 1 Mentor of a higher level for 6 Mentors of the lower level.

6.4 Setting up of Committees and their functions: -

6.4.1 The Anti-Ragging Committee: -The Anti-Ragging Committee shall be headed by

the Head of the institution and shall consist of representatives of faculty members, parents, students belonging to the freshers' category as well as seniors and non-teaching staff. It shall monitor the anti-ragging activities in the institution, consider the recommendations of the Anti-Ragging Squad and take appropriate decisions, including spelling out suitable punishments to those found guilty.

6.4.2 The Anti-Ragging Squad:- The Anti-Ragging Squad shall be nominated by the Head of the institution with such representation as considered necessary and shall consist of members belonging to the various sections of the campus community. The Squad shall have vigil, oversight and patrolling functions. It shall be kept mobile, alert and active at all times and shall be empowered to inspect places of potential ragging and make surprise raids on hostels and other hot spots. The Squad shall investigate incidents of ragging and make recommendations to the Anti-Ragging Committee and shall work under the overall guidance of the said Committee.

6.4.3 Monitoring Cell on Ragging:- If the institution is an affiliating university, it shall have a Monitoring Cell on Ragging to coordinate with the institutions affiliated to it by calling for reports from the Heads of such institutions regarding the activities of the Anti-Ragging Committees, Squads, and Mentoring Cells, regarding compliance with the instructions on conducting orientation programmes, counseling sessions, etc., and regarding the incidents of ragging, the problems faced by wardens and other officials, etc. This Cell shall also review the efforts made by such institutions to publicize anti-ragging measures, cross-verify the receipt of undertakings from candidates/students and their parents/guardians every year, and shall be the prime mover for initiating action by the university authorities to suitably amend the Statutes or Ordinances or Bye-laws to facilitate the implementation of anti ragging measures at the level of the institution.

6.5 Other measures:-

6.5.1 The Annexures mentioned in sub-clauses 6.1.4, 6.1.5 and 6.1.7of these Regulations shall be furnished at the beginning of each academic year by every student, that is, by freshers as well as semors.

6.5.2 The institution shall arrange for regular and periodic psychological counseling and orientation for students (for freshers separately, as well as jointly with seniors) by professional counselors during the first three months of the new academic year. This shall be done at the institution and department/ course levels. Parents and teachers shall also be involved in such sessions.

6.5.3 Apart from placing posters mentioned in sub-clause 6.1.9 above at strategic places, the institution shall undertake measures for extensive publicity against ragging by means of audio-visual aids, by holding counseling sessions, workshops, painting and design competitions among students and other methods as it deems fit.

6.5.4 If the institution has B.Ed. and other Teacher training programmes, these courses shall be mandated to provide for anti-ragging and the relevant human rights appreciation inputs, as well as topics on sensitization against corporal punishments and checking of bullying amongst students, so that every teacher is equipped to handle at least the rudiments of the counseling approach.

6.5.5 Wardens shall be appointed as per the eligibility criteria laid down for the post reflecting both the command and control aspects of maintaining discipline, as well as the softer skills of counseling and communicating with the youth outside the class-room situations. Wardens shall be accessible at all hours and shall be provided with mobile phones. The institution shall review and suitably

enhance the powers and perquisites of Wardens and authorities involved in curbing the menace of ragging.

6.5.6 The security personnel posted in hostels shall be under the direct control of the Wardens and assessed by them.

6.5.7 Private commercially managed lodges and hostels shall be registered with the local police authorities, and this shall be done necessarily on the recommendation of the Head of the institution. Local police, local administration and the institutional authorities shall ensure vigil on incidents that may come within the definition of ragging and shall be responsible for action in the event of ragging in such premises, just as they would be for incidents within the campus. Managements of such private hostels shall be responsible for not reporting cases of ragging in their premises.

6.5.8 The Head of the institution shall take immediate action on receipt of the recommendations of the Anti-Ragging Squad. He/ She shall also take action suo motto if the circumstances so warrant.

6.5.9 Freshers who do not report the incidents of ragging either as victims or as witnesses shall also be punished suitably.

6.5.10 Anonymous random surveys shall be conducted across the Ist year batch of freshers every fortnight during the first three months of the academic year to verify and cross-check whether the campus is indeed free of ragging or not. The institution may design its own methodology of conducting such surveys.

6.5.11 The burden of proof shall lie on the perpetrator of ragging and not on the victim.

6.5.12 The institution shall file an FIR with the police / local authorities whenever a case of ragging is reported, but continue with its own enquiry and other measures without waiting for action on the part of the police/ local authorities. Remedial action shall be initiated and completed within the one week of the incident itself

6.5.13 The Migration / Transfer Certificate issued to the student by the institution shall have an entry, apart from those relating to general conduct and behaviour, whether the student has been punished for the offence of committing or abetting ragging, or not, as also whether the student has displayed persistent violent or aggressive behaviour or any inclination to harm others.

6.5.14 Preventing or acting against ragging shall be the collective responsibility of all levels and sections of authorities or functionaries in the institution, including faculty, and not merely that of the specific body/ committee constituted for prevention of ragging.

6.5.15 The Heads of institutions other than universities shall submit weekly reports to the Vice-chancellor of the university the institution is affiliated to or recognized by, during the first three months of new academic year and thereafter each month on the status of compliance with anti-ragging measures. The Vice Chancellor of each university shall submit fortnightly reports of the university, including those of the Monitoring Cell on Ragging in case of an affiliating university, to the Chancellor.

6.5.16 Access to mobile phones and public phones shall be unrestricted in hostels and campuses, except in class-rooms, seminar halls, library etc. where jammers shall be installed to restrict the use of mobile phones.

6.6 Measures for encouraging healthy interaction between fresher's and seniors: -

6.6.1 The institution shall set up appropriate committees including the course- in-charge, student advisor, Warden and some senior students to actively monitor, promote and regulate healthy interaction between the freshers and senior students.

6.6.2 Freshers' welcome parties shall be organized in each department by the senior students and the faculty together soon after admissions, preferably within the first two weeks of the beginning of the academic session, for proper introduction to one another and where the talents of the freshers are brought out properly in the presence of the faculty, thus helping them to shed their inferiority complex, if any, and remove their inhibitions.

6.6.3 The institution shall enhance the student-faculty interaction by involving the students in all matters of the institution, except those relating to the actual processes of evaluation and of faculty appointments, so that the students shall feel that they are responsible partners in managing the affairs of the institution and consequently the credit due to the institution for good work/ performance is due to them as well.

7. Measures at the UGC/Statutory/Regulatory body level:-

7.1 Regulatory measures:-

7.1.1 The UGC and other Statutory /Regulatory bodies shall make it mandatory for the institutions to compulsorily incorporate in their 'Prospectus' the directions of the Supreme Court and/or the Central or State Governments with regard to prohibition and consequences of ragging, and that non-compliance with the directives against ragging in any manner whatsoever shall be considered as lowering of academic standards by the erring institution making it liable for appropriate action.

7.1.2 The UGC(including NAAC and UGC Expert Committees visiting institutions for various purposes) and similar Committees of other Statutory/Regulatory bodies shall cross-verify that the institutions strictly comply with the requirement of getting the undertakings from the students and their parents/ guardians as envisaged under these Regulations.

7.1.3 The UGC and other funding bodies shall make it one of the conditions in the Utilization Certificate for sanctioning any financial assistance or aid to the institution under any of the general or special schemes that the institution has strictly complied with the anti-ragging measures and has a blemish-less record in terms of there being no incidents of ragging during the period pertaining to the Utilization Certificate.

7.1.4 The NAAC and other accrediting bodies shall factor in any incident of ragging in the institution while assessing the institution in different grades.

7.2 Incentives for curbing ragging: -

7.2.1 The UGC shall consider providing special/ additional annual financial grants-in-aid to those eligible institutions which report a blemish-less record in terms of there being no incidents of ragging.

7.2.2 The UGC shall also consider instituting another category of financial awards or incentives for those eligible institutions which take stringent action against those responsible for incidents of ragging.

7.2.3 The UGC shall lay down the necessary incentive for the post of Warden in order to attract the right type of eligible candidates, and motivate the incumbents.

7.3 Monitoring mechanism to ensure compliance: -

Apart from the monitoring mechanism built in under different sub-clauses of these Regulations, there shall also be the following monitoring mechanism:

7.3.1 The UGC shall constitute an Inter-Council Committee for prevention of Ragging consisting of representatives of the AICTE, the IITs, the NITs, the IIMs, the MCI, the DCI, the NCI, the ICAR and such other bodies which have to deal with higher education to coordinate and monitor the anti-ragging movement across the

country and to make certain policy decisions. The said Committee shall meet at least twice a year in the normal course.

7.3.2 The UGC shall also have an Anti-Ragging Cell within the Commission as an institutional mechanism to provide secretarial support for collection of information and monitoring, and to coordinate with the State level and university level Committees for effective implementation of anti-ragging measures.

8. Punishments:-

8.1 At the institution level:-

Depending upon the nature and gravity of the offence as established by the Anti-Ragging Committee of the institution, the possible punishments for those found guilty of ragging at the institution level shall be any one or any combination of the following:

8.1.1 Suspension from attending classes and academic privileges
8.1.2 Withholding/withdrawing scholarship/fellowship and other benefits
8.1.3 Debarring from appearing in any test/examination or other evaluation process
8.1.4 Withholding results
8.1.5 Debarring from representing the institution in any regional, national or international meet, tournament, youth festival, etc.
8.1.6 Suspension/expulsion from the hostel
8.1.7 Cancellation of admission
8.1.8 Rustication from the institution for period ranging from 1to 4 semesters
8.1.9 Expulsion from the institution and consequent debarring from admission to any other institution for a specified period.
8.1.10 Fine ranging between Rupees 25,000/- and Rupees 1 lakh
8.1.11 Collective punishment: When the persons committing or abetting the crime of ragging are not identified, the institution shall resort to collective punishment.

8.2At the university level in respect of institutions under it:-

If an institution under a university (being constituent of, affiliated to or recognized by it) fails to comply with any of the provisions of these Regulations and fails to curb ragging effectively, the university may impose any one or any combination of the following penalties on it:

8.1.1 Withdrawal of affiliation/recognition or other privileges conferred on it
8.1.2 Prohibiting such institution from presenting any students then undergoing any programme of study therein for the award of any degree/diploma of the university
8.1.3 Withholding grants allocated to it by the university, if any
8.1.4 Withholding any grants chanellised through the university to the institution
8.1.5 Any other appropriate penalty within the powers of the university.

8.3 At the appointing authority level:-

The authorities of the institution, particularly the Head of the institution, shall be responsible to ensure that no incident of ragging takes place in the institution. In case any incident of ragging takes place, the Head shall take prompt and appropriate action against the person(s) whose dereliction of duty lead to the incident. The authority designated to appoint the Head shall, in its turn, take prompt and appropriate action against the Head.

8.4 At the UGC/Statutory/Regulatory body level:-

If an institution fails to curb ragging, the UGC/Statutory/Regulatory body concerned may impose anyone or any combination of the following penalties on it:

8.4.1 Delisting the institution from section 12B of the UGC Act or any similar

provision in the Act of the Statutory/Regulatory body concerned.

11.4.2 Withholding any grants allocated to it

11.4.3 Declaring the institution ineligible for consideration for any assistance under any of the general or special assistance programmes of the UGC/Statutory/ Regulatory body concerned

11.4.4 Declaring that the institution does not have the minimum academic standards and warning the potential candidates for admission accordingly through public notice and posting on the UGC Website/ Website of the Statutory/Regulatory body concerned.

11.4.5 Taking such other action within its powers as it may deem fit and impose such other penalties as provided till such time as the institution achieves the objective of curbing ragging.

11.4.6 Collaborating with one another to work out other possible deterrents.

PLEASE NOTE:

Advisory from UGC regarding revised procedure of Anti-Ragging Undertaking:

- The students have to mandatorily fill the undertaking at the below link: https://antiragging.in/affidavit_registration_disclaimer.html
- Further, note down the generated unique reference number for future reference.

National Anti-Ragging Helpline

24x7 Toll Free

1800-180-5522

helpline@antiragging.in | www.antiragging.in

ANNEXURE I, PartI

UNDERTAKING BY THE CANDIDATE/STUDENT1.

1. I, …… S/o. O/o. of Mr./Mrs./Ms. ……..have carefully read and fully understood the law prohibiting ragging and the directions of the Supreme Court and the Central/State Government in this regard.

2. I have received a copy of the UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009, and have carefully gone through it.

3. I hereby undertake that

   - I will not indulge in any behavior or act that may come under the definition of ragging,
   - I will not participate in or abet or propagate ragging in any form,
   - I will not hurt anyone physically or psychologically or cause any other harm.

4. I hereby agree that if found guilty of any aspect of ragging, I may be punished as per the provisions of the UGC Regulations mentioned above and/or as per the law in force.

5. I have filled out the online undertaking and also submitted the anti-ragging compliance form on www.antiragging.in, and the generated reference number is ……

6. I hereby affirm that I have not been expelled or debarred from admission by any institution.

Signed this……day of…… month of…… year

Signature

Name: Address:

ANNEXURE I, PartII

UNDERTAKING BY PARENT/GUARDIAN

1. I, …… F/o. M/o. G/o …….. have carefully read and fully understood the law prohibiting ragging and the directions of the Supreme Court and the Central/State Government in this regard as well as the UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009.
2. I assure you that my son/ daughter/ ward will not indulge in any act of ragging.
3. I hereby agree that if he/she is found guilty of any aspect of ragging, he/she may be punished as per the provisions of the UGC Regulations mentioned above and/or as per the law in force.

Signed this…….. day of ……month of ……Year

Signature

Name:

Address:

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