भारतीय प्रौद्योगिकी संस्थान रूड़की
रूड़की – 247 667 (भारत)
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE - 247 667 (INDIA)

सीनेट की एकसौवी बैठक हेतु कार्यसूची
AGENDA FOR THE 100th MEETING OF THE SENATE

बैठक सं0	:	एकसौवीं
MEETING NO.	**:**	**100th**
स्थान	:	सीनेट हॉल, भा0प्रौ0सं0रूड़की
VENUE	**:**	**Senate Hall, IIT Roorkee**
दिनांक	:	06 मार्च 2024
DATE	**:**	**06th March 2024**
समय	:	04.00 बजे अपरान्ह
TIME	**:**	**04.00 P.M.**

भारतीय प्रौद्योगिकी संस्थान रूड़की
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
रूड़की 247 667
ROORKEE – 247 667

कार्यसूची / AGENDA

मुद्दा सं0 / Item No.	विवरण / **Particulars**	पृष्ठ / **Page(s)**
100.1	सीनेट की दिनांक 03.01.2024 को आयोजित हुई 99वीं बैठक के कार्यवृत्त की पुष्टि करना। To confirm the minutes of the 99th Senate meeting held on 03.01.2024.	1
100.2	सीनेट की दिनांक 03.01.2024 को आयोजित हुई 99वीं बैठक में लिए गए निर्णयों के क्रियान्वयन पर की गई कार्यवाही को रिपोर्ट करना। To report on the actions taken to implement the decisions of the Senate taken in its 99th meeting held on 03.01.2024	2-7
100.3	पूर्व–पीएचडी (सीएस) छात्र, श्री सुमन नारायण, (एन.सं.20535028) को एम.टेक डिग्री पूरा करने की अनुमति देने के लिए के अनुरोध पर विचार करना। To Consider the request of Mr. Suman Narayan, (Enr. No. 20535028), Ex-Ph.D. (CS) student for allowing him to complete M.Tech. degree.	8-20
100.4	पीएचडी प्रवेश कार्यक्रम शरद ऋतु सेमेस्टर 2024–25 के लिए सीट मैट्रिक्स पर विचार करना। To consider the Seat Matrix for admission in the Ph.D. programme in Autumn Semester 2024-2025.	21-22
100.5	विभिन्न विभागों / केंद्रो / स्कूलो से प्राप्त एम.टेक कार्यक्रम में प्रवेश के लिए न्यूनतम शैक्षणिक योग्यता में बदलाव पर विचार करना। To consider the change(s) in Minimum Educational Qualification for admission to M.Tech. programmes received from various Departments/Centres/School.	23-25

100.6	शैक्षणिक वर्ष 2024–2025 के लिए गेट 2024 के माध्यम से एम.टेक कार्यक्रम में प्रवेश के लिए गेट विषयों और सीट मैट्रिक्स पर विचार करना। To consider the eligible GATE disciplines and seat matrix for admission into the M.Tech. programmes through GATE 2024 for the AY 2024-2025.	26-27
100.7	धातुकर्म और पदार्थ इंजीनियरिंग विभाग के नये पी.जी. कार्यक्रम शुरू करने के प्रस्ताव पर विचार करना। To consider the proposal to introduce a new P.G. Programme by the Department of Metallurgical and Materials Engineering.	28-32
100.8	डिज़ाइन विभाग में पीएचडी के लिए पंजीकरण कराने वाले छात्रों को कुछ मानदंडों को पूरा करने के दो–डिग्री (एम.डेस. और पीएच.डी.) प्रदान करने के डिजाइन विभाग के प्रस्ताव पर विचार करना। To consider the proposal of the Department of Design to offer Two-Degrees (M.Des. and Ph.D.) to the students who register for Ph.D. in the Department of Design subject to fulfillment of few criteria.	33-34
100.9	शैक्षणिक वर्ष 2024–2025 से लागू होने वाले नए पीजी पाठयक्रम के अनुसार विभिन्न विभागों/केंद्रो/स्कूलों द्वारा प्रस्तावित मास्टर कार्यक्रमों की संरचनाओं पर विचार करना। To consider the structures for the masters programmes offered by various Departments/Centres/School as per the new PG curriculum to be implemented w.e.f. the AY 2024-2025.	35-134
100.10	विभाग/केंद्र/स्कूल की संकाय खोज समिति (डीएफएससी/ सीएफएससी/ एसएफएससी) के मौजूदा दिशानिर्देशों में मामूली संशोधन पर विचार करना। To consider minor modifications in the existing guidelines of Department/Centre/School Faculty Search Committee (DFSC /CFSC/SFSC).	135-141
100.11	सीनेट की ओर से अध्यक्ष, सीनेट द्वारा दी गई मंजूरी की रिपोर्ट करना। To report the approval accorded by the Chairman, Senate on behalf of the Senate.	142-145
अन्य मुददे अध्यक्ष की अनुमति से/Under any other item with the permission of the Chair.		

Item No. 100.1: To confirm the minutes of the 99th Senate meeting held on 03.01.2024.

The minutes of the 99th Senate meetings held on 03.01.2024 were circulated to the members vide e-mail dated 29.01.2024. No comments have been received.

The Senate may consider and confirm the said minutes.

Item No. 100.2: To report on the actions taken to implement the decisions of the Senate taken in its 99th meeting held on 03.01.2024.

Item No.	Reference to the Senate minutes	Extracts of the Minutes	Status of action taken
99.3	To consider the request of Mr. Deeptanshu Rai (Enr. No. 21115047), B.Tech. (EE), III Yr regarding name restoration and continuation in programme.	The Senate considered the request of Mr. Deeptanshu Rai for name restoration and continuation in programme. The Senate accepted the same and approved as recommended by the IAPC.	Notified
99.4	To consider the requests of the following students to review the actions due to involvement in unfair means: 1. G. Vamshi Krishna (Enr. No.18114023), B.Tech. (CS), IV Yr 2. Nagulapati Sainath (Enr. No.18116050), B.Tech. (EC), IV Yr 3. Sai Rohan Pawar (Enr. No.21114088), B.Tech. (CS), III Yr	The Senate considered the requests of the students alongwith the recommendations of the IAPC and did not accept the requests of the students.	Notified
99.5	To consider the request of Mr. Sangeeth S. Pillai, (En. No. 14902004), ex-Ph.D. student, Dept. of Architecture & Planning.	The Senate considered the IRC recommendations and allowed time extension to Mr. Sangeeth S. Pillai upto 14.05.2024 as a special case and approved the recommendation of the IRC that no further mercy appeal for reinstatement of his academic registration be considered in future and that a warning be issued to him to this effect. Further, the Senate expressed its concern on the unusual delay in completion of the Ph.D. work. The Senate advised that supervisors should devote ample time with their research scholars and mentor them appropriately.	Notified

99.6	To consider the seat matrix for admission into the M.Sc. programmes through JAM 2024 for the AY 2024-2025.	The Senate approved the seat matrix for M.Sc. Programmes for the academic year 2024-2025	Notified
99.7	To consider the Report of the PG Curriculum Revision Committee (PCRC).	The Senate considered the report of the PG Curriculum Revision Committee (PCRC) along with the recommendation of the IAPC. The Senate approved the PG Curriculum as recommended by the IAPC to be implemented with effect from the Autumn semester 2024-2025. The Senate further decided that the Grade Point obtained in the Thesis work shall be counted towards calculating the CGPA. However, while calculating the CGPA, the weightages of evaluations of the Thesis-I and Thesis-II shall be 25% and 75%, respectively. The Senate directed the Departments/Centres /Schools to act swiftly on the following: (a) To decide the 'Mode of Intake' (Option-A/Option-B) for admission to the Departments/Centres /Schools. (b) To develop the programme structures as per the revised curriculum framework for consideration of the IAPC/Senate. (c) To develop the course baskets, new courses as well as to update the existing courses substantially. The Senate placed on records its sincere appreciation to the PG Curriculum Revision Committee (PCRC) for its commendable efforts.	Notified

99.8	To consider the following proposals to introduce new P.G. Programmes by the Department of Biosciences and Bioengineering: 1. M.Tech. in Structural and Computational Biology 2. M.Tech in Biotechnology 3. M.Tech in Biomanufacturing	The Senate considered the proposals and approved the following new PG Programmes along with their Minimum Eligibility Qualifications (MEQs): 1. M.Tech. in Structural and Computational Biology 2. M.Tech. in Biomanufacturing 3. M.Tech. in Space Science and Technology Further, the Senate approved the following: (a) The intake for each programme shall be 15. (b) The programmes shall be offered with effect from the Academic Session 2024-2025 (c) The M.Tech. in Bioprocess Engineering offered by the Department of Biosciences and Bioengineering shall cease to be offered with effect from the Academic Session 2024-2025.	Notified
99.9	To consider the proposals for renaming of M.Tech. Programmes of following Departments: 1. Renaming of M.Tech. programme in 'Solid State Electronic Materials' to 'Solid State Electronic Technology' of Department of Physics. 2. Renaming of M.Tech. programme in 'Infrastructure Systems' to 'Transportation Systems Management' of Centre for Transportation Systems.	The Senate considered and approved the proposal on renaming of the two M.Tech. Programmes as recommended by the IAPC.	Notified

99.10	To consider the proposal of the Department of Electronics and Communication Engineering to increase the number of seats for M.Tech. (VLSI) for industry professionals to 30 (thirty).	The Senate considered the proposal and approved the intake to 30 from the academic year 2024-2025.	Notified
99.11	To consider the proposal of the Department of Hydro and Renewable Energy to offer B.Tech. programme in 'Energy Engineering' along with its course structure and intake.	The Senate considered and approved the proposal of the Department of Hydro and Renewable Energy to offer B.Tech. programme in 'Energy Engineering', alongwith the programme structure. The course will be offered from the academic session 2024-2025 with an intake 20.	Notified
99.12	To consider the proposal of the Department of Design to offer Bachelor of Design (B. Des.) programme along with its course structure and intake.	The Senate considered the proposal and noted that the Department of Design was established in 2021 by the Board of Governors (vide Resolution No.BG/05/2021) with M.Des. programme to be offered by the Department in the first phase with a provision to start B.Des. programme in next phase of development. The Senate approved the proposal of the Department of Design to offer the Bachelor of Design (B.Des.) Programme alongwith its course structure. The programme will be made effective from the autumn semester 2024-2025 with intake of 20. The admission for the programme shall be through the UCEED.	Notified

		The Senate further approved that the Co-ordinating Committee/Chairperson, UCEED, IIT Bombay be informed accordingly to the needful and to include the relevant information in the Information Brochure for UCEED 2024.	
99.14	To consider a proposal for renaming of the course 'Indian Knowledge System' as 'Introduction to Indian Knowledge system'.	The Senate considered and approved the proposal to rename the course as 'Introduction to Indian Knowledge System' along with its syllabus.	Notified
99.15	To consider the following proposals of the Department of Management Studies in respect of the EMBA programme: (i) To replace a PCC (2 credit) i.e. 'BMN-531: Legal Aspects of Business' from Structure of Term 4 EMBA with a new course i.e. 'Sustainable Development Goals (SDG)'. (ii) To offer all approved PECs of MBA under the basket of PECs for EMBA.	The Senate considered and approved the proposals.	Notified
99.17	To consider the intake/Seat Matrix for the UG Programmes for the Academic Session 2024-2025.	The Senate approved the Seat Matrix for the UG programmes for the Academic Session 2024-2025. Further, the Senate advised that the Department of Chemical Engineering, Materials and Metallurgical Engineering and Mechanical and Industrial Engineering should review their intake, commensurate to the demand.	Notified

99.19	To consider the data regarding the students appearing in the Second Examination in the last three semesters and a proposal regarding award of grade point in the Second examination.	The Senate took a serious concern on growing trend for the second examination of ETEs over the last three semesters. To avoid any misuse of this provision which is otherwise available to the students for extra-ordinary situations. The senate considered the proposal and accepted the following: 1. The Chief Medical Officer be informed that the Medical board should ensure the genuinity of cases. 2. Degree of second examination be kept on higher side by raising its level of difficulty. 3. The maximum grade point awarded be eight (8). However, if the earned grade point 4 (letter grade-D,) that shall not be lowered. 4. The students who are registering for the second examinations (on medical/Extra ordinary Ground) shall be awarded one grade lower than the one which he/she would have otherwise obtained as per the procedures adopted for normal grading.	Notified and implemented
Item Nos.99.13 & 99.16 were dropped and no.99.18 is reporting items			

Item No. 100.3: To Consider the request of Mr. Suman Narayan, (Enr. No. 20535028), Ex-Ph.D. (CS) student for allowing him to complete M.Tech. degree.

Mr. Suman Narayan, (En.20535028), M.Tech. Student, Dept. of Computer Science & Engineering, was registered on August 19, 2020. He joined the PhD programme in the Dept. of Computer Science & Engineering on August 14, 2021, with Institute Assistantship under the switchover Scheme. Following the unsatisfactory progress and performance in the Autumn Semester 2022-23, he was warned and advised to improve his performance vide letter no. Research/4294/P.F. dated 14.12.2022. His progress and performance in the Spring Semester 2022-23 was also reported unsatisfactory. Due to two consecutive UNSATISFACTORY Progress Reports, his academic registration was cancelled vide e-mail dated August 14, 2023. (Ph.D. Rule-R.5) **(Appendix-A).** He was not able to clear candidacy requirements. In this regard, guidelines as approved by the Senate is placed at **(Appendix-B)**.

It is also stated that due to his behaviour, he was expelled by the DoSW from March 03,2023 to March 20, 2023 and from April 27, 2023 to July 16, 2023.**(Appendix-C)**.

His mercy appeal for reinstatement of academic registration was not recommended by the Special SRC. **(Appendix-D).** Accordingly**,** the 64th IRC did not recommend his mercy appeal for reinstatement of academic registration; the Chairman Senate, on behalf of the Senate, did not approve the appeal. **(Appendix-E)**.

Meanwhile, he had completed M.Tech. Dissertation (Thesis) for the award of M.Tech. degree duly signed and certified by his supervisor in December 2023 and requested to award him the M.Tech. Degree.

Mr. Suman Narayan is not on the Institute roll w.e.f. August 14, 2023; therefore, he is not eligible to submit M.Tech. Thesis during the N.S.O. period.

The IAPC, in its 137th meeting held on 07.02.2024, considered the matter and recommended name restoration of the student in M.Tech. programme w.e.f. Spring Semester 2023-24 with permission to submit the thesis latest by October, 2024.

The above is submitted for the consideration of the Senate.

O.M. regarding name struck off in r/o Mr. Suman Narayan (Enroll. No.20535028) Ex-PhD student, Deptt. of Computer Science and Engg.

From : Assit RegistrarEvaluation <arevaluation@iitr.ac.in> Mon, Aug 14, 2023 04:14 PM

Subject : O.M. regarding name struck off in r/o Mr. Suman Narayan (Enroll. No.20535028) Ex-PhD student, Deptt. of Computer Science and Engg.

To : Head Computer Science and Engineering <head@cs.iitr.ac.in>

Cc : DRC CS <drc@cs.iitr.ac.in>, Dean AcademicAffairs <daa@iitr.ac.in>, Assoc DeanofAcademicAffairs <adaa-evaluation@iitr.ac.in>, Dean Student Welfare <dosw@iitr.ac.in>, raksha sharma <raksha.sharma@cs.iitr.ac.in>, SUMAN NARAYAN <s_narayan@cs.iitr.ac.in>, Academic Affairs Office <aao-phd@iitr.ac.in>

OFFICE MEMORANDUM

Progress reports of **Mr. Suman Narayan** (Enroll. No.20535028), Full-Time Ph.D. student, Deptt. of Computer Science and Engg., have been reported Unsatisfactory for the Autumn Semester 2022-23 & Spring Semester 2022-23, his registration in Ph.D. programme is terminated with immediate effect under Ph.D Rules & Regulations R.5.

Note- Students facing difficult personal circumstances and having adequate promise to complete their academic programme can appeal for reinstatement of their programme as per the process established for the sme.

Assistant Registrar (Evaluation)

Butch 14/8/2023

शैक्षणिक अफेयर्स कार्यालय

ACADEMIC AFFAIRS OFFICE

भारतीय प्रौद्योगिकी संस्थान रूड़की

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

सं. रिसर्च / ५३९५ /पी.एफ. दिनांक : दिसम्बर 12, 2022

Mr. Suman Narayan
P.h.D Student
En.No. 20535028
Deptt. of Computer Science and Engg.

As per progress report for the Autumn Semester 2022-23 session, your progress in the research work for the Ph.D. Programme has been reported by SRC as Unsatisfactory. You are hereby warned and advised to improve your performance. If two consecutive unsatisfactory progress reports are received, your registration will stand terminated in accordance with Ph.D. Regulations. R.9.

Assistant Registrar
(Evaluation)
13/12/22

Copy through e-mail to:

1. Head/ Chairperson DRC, Deptt. of Computer Science and Engg.
2. Dean of Students' Welfare.
3. Dean of Academic Affairs.
4. Associate Dean of Academic Affairs (Evaluation).
5. Assistant Registrar (Finance & Accounts).
6. Prof. Raksha Sharma, Deptt. of Computer Science and Engg. (Supervisor).
7. Prof. Debiprasanna Sahoo, Deptt. of Computer Sciences and Engg. (Supervisor).
8. Student File.

1. Civil Engineering Department	M.Tech. Building Technology
2. Electronics & Communication Engineering Department	M.Tech. System Modelling and Control
3. Metallurgical & Materials Engineering Department	M.Tech. Corrosion Engineering
4. Mathematics Department	M.Sc. Industrial Mathematics and Informatics.

It was also resolved that proposed new programmes by the Departments will be considered later on.

Item No.54.5: **To re-consider the proposal of starting a Dual Degree Programme (M.Tech. + Ph.D.).**

A proposal for starting a Dual Degree Programme (M.Tech.+ Ph.D), received from Prof. & Head, Department of Electrical Engineering, was considered by the IAPC in its 31st meeting held on November 26, 2013 vide item No. 31.2.4 and it was resolved that the proposal with full details be referred to all Departments for consideration in their DFC before placing it in the IAPC again. The Departments considered the proposal in their DFC and sent their feedback. The IAPC reconsidered the proposal and the feedback received from the Departments and its recommendations were sent to the Senate for consideration. After due deliberation, the Senate approved the following:

1. The dual degree programme (M.Tech. + Ph.D) will be started by all the Engineering Departments and the Architecture & Planning Department.
2. The students will be admitted in M.Tech. only, as per the present practice followed by the Departments.
3. After completing two semesters of M.Tech. I Year, the students having a CGPA exceeding 7.50, will be given the choice to apply for the Ph.D. programmeme, if he/she so desires.
4. Once admitted for the Ph.D. programme, the normal Ph.D. rules, including fellowship, leave etc., will be admissible.
5. These students will get two degrees, i.e. both M.Tech. and Ph.D. after successful completion of Ph.D.
6. The students admitted for Ph.D. may have to do extra courses as recommended by the SRC to carry out the research work.
7. These students will have to go through a comprehensive written and a comprehensive oral

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examination after completing the extra courses, if any.

8. Only after successfully completing the comprehensive examination, a student can present the research proposal.
9. The date of candidacy will be considered as the date on which the research proposal is presented by the student and accepted by the SRC.
10. The minimum duration for submitting the thesis is TWO years from the date of candidacy.
11. These students will not be eligible for campus placement alongwith the M.Tech. students. However, they can appear for campus placement alongwith Ph.D. students.
12. If a student fails in comprehensive examination, he/she may continue with M.Tech.
13. In case, if a student is asked to leave the Ph.D. programme in between due to some reason, after the candidacy, he/she can leave the programme with M.Tech. degree only provided he/she submits the work completed till then as the M.Tech. dissertation work, satisfying the requirement of being awarded a M.Tech. degree. However, if a student leaves the programme on his/her own, he/she will not be entitled to any degree.

It was also resolved that even for regular full-time and part-time candidates, date of presenting the research proposal and acceptance by the SRC be considered as date of candidacy and minimum period of submission shall be TWO YEARS from the date of candidacy.

Item No. 54.6 **To consider the Report of the Ph.D. Programme Committee.**

A committee was constituted by the Dean, Academics under the Chairman ship of Prof. Pradeep Kumar, Department of Civil Engineering to suggest the changes in the admission criteria to enhance the quality of Ph.D. admission and to improve the overall environment of research in the Institute. The committee submitted its report. The IAPC considered the report and after detailed discussion sent the recommendations for the consideration of the Senate. After detailed discussion, the Senate resolved the following:

1. The Ph.D. admission should be conducted in two stages:

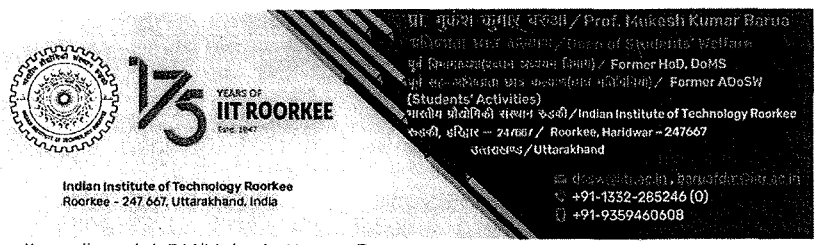
21 MAR 2016

mbra raksha.sharma@cs.iitr.ac.

Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

From : Dean StudentWelfare <dosw@iitr.ac.in> Thu, Apr 27, 2023 10:27 AM
Subject : Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan 4 attachments
To : Chief WardenAzadBhawan <cw.azadb@iitr.ac.in>
Cc : Raksha Sharma <raksha.sharma@cs.iitr.ac.in>, Head Computer Science and Engineering <head@cs.iitr.ac.in>, Dosw Office <officedosw@iitr.ac.in>, ADOSW <adosw-bhawan@iitr.ac.in>, Assoc.Dean OfStudentWellness <adoswsw@iitr.ac.in>, Azad Bhawan <azadbhawan@iitr.ac.in>, Azad BhawanMess <azadbhawanmess@iitr.ac.in>, benny karunakar <benny.karunakar@me.iitr.ac.in>, Debiprasanna Sahoo <debiprasanna.sahoo@cs.iitr.ac.in>

CW: (1) Inform his parents about the incident (2) Send him back home (3) He can not come to the campus before July 16th, 2023.



https://www.iitr.ac.in/~DM/Mukesh_Kumar_Barua

From: "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>
To: "Dean StudentWelfare" <dosw@iitr.ac.in>
Cc: "Raksha Sharma" <raksha.sharma@cs.iitr.ac.in>, "Head Computer Science and Engineering" <head@cs.iitr.ac.in>, "Dosw Office" <officedosw@iitr.ac.in>, "ADOSW" <adosw-bhawan@iitr.ac.in>, "Assoc.Dean OfStudentWellness" <adoswsw@iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Azad BhawanMess" <azadbhawanmess@iitr.ac.in>, "benny karunakar" <benny.karunakar@me.iitr.ac.in>, "Debiprasanna Sahoo" <debiprasanna.sahoo@cs.iitr.ac.in>
Sent: Thursday, April 27, 2023 10:16:10 AM
Subject: Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Dear Prof. Barua,
Please refer the email received from Mr. Ankit (Azad Bhawan wellness Secretary), regarding Mr. Suman Narayan, a doctoral student under the supervision of Prof. Raksha Sharma, CSE, IITR. **(email copy attached)**
Considering Mr. Suman's health conditions, yesterday evening we have arrange to admit him to the IITR hospital after consulting with Wellness counselor. We have also arranged to have one security personal with him since yesterday evening.
This morning myself and Associate DOSW (Student Wellness), meet the doctor and Mr. Suman has been discharged from the hospital and he will continue to be with one security personal at the hostel, outside his room, as suggested by doctor (just to assist him for any needs).

However, as you see (email trails), Mr. Suman repeating this again and again. A similar incident happened on March 02, 2023 and Mr. Suman was admitted to the IITR Hospital.
Next, after your suggestion, he went to his parents/home and he stayed there till March 20th, 2023.
Further, please have a look into the email received from Prof. Raksha Sharma and she is also very much concerned about Mr. Suman's Health.

Therefore, considering the present situations, I kindly request, please do the needful at your earliest possible, so that such incidents should not repeat again in future.
Please let me know for any further assistance and I will be available at 7088268764.

Thank you and best regards,
Debasis

From: "Raksha Sharma" <raksha.sharma@cs.iitr.ac.in>
To: "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>
Cc: "Head Computer Science and Engineering" <head@cs.iitr.ac.in>, "Dean StudentWelfare" <dosw@iitr.ac.in>, "Dosw Office" <officedosw@iitr.ac.in>, "ADOSW" <adosw-bhawan@iitr.ac.in>, "Assoc.Dean Of Student Wellness" <adoswsw@iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Azad BhawanMess" <azadbhawanmess@iitr.ac.in>, "benny karunakar" <benny.karunakar@me.iitr.ac.in>, "Debiprasanna Sahoo" <debiprasanna.sahoo@cs.iitr.ac.in>
Sent: Wednesday, April 26, 2023 11:28:45 PM
Subject: : Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Dear Prof. Debasis,

My PhD student Mr. Suman Narayan was admitted to the hospital by wellness staff in the presence of Prof. Karunakar.

This seems a repeated incident. I am planning to take this matter to dean academics through proper channel, but it might take some time to get response.

I am afraid if he is allowed to continue stay in the hostel he might harm himself. He needs to be in consistent observation.

I request you to send Mr. Suman to his home by informing his brother/parents for 1 month. Kindly arrange the needful.

Thanks and Regards,
Raksha Sharma
CSE, IITR
Mobile - 8879261844

From: "Raksha Sharma" <raksha.sharma@cs.iitr.ac.in>
To: "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>
Cc: "Head Computer Science and Engineering" <head@cs.iitr.ac.in>, "Dean StudentWelfare" <dosw@iitr.ac.in>, "Dosw Office" <officedosw@iitr.ac.in>, "ADOSW" <adosw-bhawan@iitr.ac.in>, "Assoc.Dean Of Student Wellness" <adoswsw@iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Azad BhawanMess" <azadbhawanmess@iitr.ac.in>
Sent: Saturday, March 4, 2023 6:08:09 PM
Subject: Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Thank you for informing Prof Debasis.

Suman has not made any progress in his PhD so far. His study is mostly computational, which can be continued from home also. So, if required his stay in home can be extended.

Regards,
Raksha Sharma

From: "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>
To: "Raksha Sharma" <raksha.sharma@cs.iitr.ac.in>, "Head Computer Science and Engineering" <head@cs.iitr.ac.in>
Cc: "Dean StudentWelfare" <dosw@iitr.ac.in>, "Dosw Office" <officedosw@iitr.ac.in>, "ADOSW(Bhawan & Mess) IITR" <adosw-bhawan@iitr.ac.in>, "Assoc.Dean Of Student Wellness" <adoswsw@iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Azad BhawanMess" <azadbhawanmess@iitr.ac.in>
Sent: Friday, March 3, 2023 6:44:11 PM
Subject: Fwd: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Dear Prof. Raksha Sharma,

As discussed over the phone and in reference to the above subject, it was observed that, Mr. Suman Narayan has been relieved from the hospital and returned to the Azad Bhawan.
He is under observation of Wellness counselor.
Bhawan Supervisor talked to his home/brother and his brother will be coming to visit him this evening. His brother will stay with him at Azad Bhawan (Guest room booked) and will take Mr. Suman to his home on Monday Morning.
As suggested by DOSW, Mr. Suman many stay at his home till March 20, 2023 and after that he may return to the Bhawan.

This is for your kind information please and email also copied to head@cs for his information please.

Best regards,
Debasis

From: "Assoc.Dean Of Student Wellness" <adoswsw@iitr.ac.in>
To: "Dean StudentWelfare" <dosw@iitr.ac.in>
Cc: "debasis banerjee" <debasis.banerjee@cy.iitr.ac.in>, "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>, "VISHAL" <vishal@eq.iitr.ac.in>, "Uday Singh" <uaday.singh@ma.iitr.ac.in>, "ADOSW" <adosw-bhawan@iitr.ac.in>, pic@security.iitr.ac.in, "Abhayanand SinghMaurya" <asmaurya@es.iitr.ac.in>, bganeshp22@gmail.com, "REDDY CHAITANYA" <chaitanya.ece@sric.iitr.ac.in>, "VIKASH KUMAR" <vikash_k@hs.iitr.ac.in>, "ankit s" <ankit_s@ph.iitr.ac.in>, "CHALAVADI SAI SRUJAN KUMAR" <ckumar1@ce.iitr.ac.in>, "Ishtiaq" <ishtiaq_a@ce.iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Avlokita Agrawal" <avlokita@ar.iitr.ac.in>, "ADARSH TRIPATHI" <atripathi@es.iitr.ac.in>
Sent: Friday, March 3, 2023 6:30:40 PM
Subject: Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Good Evening Prof. Barua,
As of now, Mr. Suman Narayan has been declared fit by hospital authorities and has been relieved from the hospital. He has been sent back to his hostel room. I talked to his supervisor, Prof. Debi Sahoo from CSE department. As per your suggestion, he has been asked to go back to his home town for 2 weeks and return back afterwards.
Best regards
Avlokita

From: "Dean StudentWelfare" <dosw@iitr.ac.in>
To: "Debasis Banerjee" <debasis.banerjee@cy.iitr.ac.in>
Cc: "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>, "VISHAL" <vishal@eq.iitr.ac.in>, "Uday Singh" <uaday.singh@ma.iitr.ac.in>, "ADOSW IITR" <adosw-bhawan@iitr.ac.in>, pic@security.iitr.ac.in, "Abhayanand SinghMaurya" <asmaurya@es.iitr.ac.in>, bganeshp22@gmail.com, "REDDY CHAITANYA" <chaitanya.ece@sric.iitr.ac.in>, "VIKASH KUMAR" <vikash_k@hs.iitr.ac.in>, "ankit s" <ankit_s@ph.iitr.ac.in>, "CHALAVADI SAI SRUJAN KUMAR" <ckumar1@ce.iitr.ac.in>, "ishtiaq ahmed" <ishtiaq_a@ce.iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Avlokita Agrawal"

<avlokita@ar.iitr.ac.in>, "Assoc.Dean OfStudentWellness" <adoswsw@iitr.ac.in>, "atripathi" <atripathi@es.iitr.ac.in>
Sent: Friday, March 3, 2023 11:05:59 AM
Subject: Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

CW: He may be asked to go home till March 20th.

https://www.iitr.ac.in/~DM/Mukesh_Kumar_Barua

From: "VISHAL" <vishal@eq.iitr.ac.in>
To: "Debasis Banerjee" <debasis.banerjee@cy.iitr.ac.in>, "Chief WardenAzadBhawan" <cw.azadb@iitr.ac.in>
Cc: "Uday Singh" <uaday.singh@ma.iitr.ac.in>, "Dean StudentWelfare" <dosw@iitr.ac.in>, "ADOSW" <adosw-bhawan@iitr.ac.in>, pic@security.iitr.ac.in, "Abhayanand SinghMaurya" <asmaurya@es.iitr.ac.in>, bganeshp22@gmail.com, "REDDY CHAITANYA" <chaitanya.ece@sric.iitr.ac.in>, "VIKASH KUMAR" <vikash_k@hs.iitr.ac.in>, "ankit s" <ankit_s@ph.iitr.ac.in>, "CHALAVADI SAI SRUJAN KUMAR" <ckumar1@ce.iitr.ac.in>, "ishtiaq ahmed" <ishtiaq_a@ce.iitr.ac.in>, "Azad Bhawan" <azadbhawan@iitr.ac.in>, "Avlokita Agrawal" <avlokita@ar.iitr.ac.in>, "Assoc.Dean OfStudentWellness" <adoswsw@iitr.ac.in>, "atripathi" <atripathi@es.iitr.ac.in>
Sent: Friday, March 3, 2023 2:13:46 AM
Subject: Re: Concerns Regarding Suman Narayan's Behavior in Azad Bhawan

Respected Sir

I want to inform you about the recent incident that happened on 02-03-2023 in bhawan. I got a call from assistant warden about the nuisance created by Mr. Suman Narayan. I was in department, i came to bhawan by walk. I When I reach bhawan, i saw three to four guards, assistant warden, along with few students were standing there. I came to know that he is constantly knocking door and abusing. Alot of efforts have been done to keep him calm but he was constantly was worried for him so during walk i call to wellness warden but he suggests to call security. He said he will come tomorrow. creating noise. Few students residing near to his room also informed same. After constant suggestion from guards to recommend him for medical examination. we thought of recommending him. Also, guard ask us to give in written for recommendation. otherwise they will not take him for any examination. So looking at need of hour, I along with assistant warden and technical secretary wrote an application and recommend him for his well being. Ambulance and more guards were called and he has been taken to hospital. We went to hospital and saw that they are properly examining him. I request you to kindly look into matter.

Thanks and regards
Vishal
Bhawan Secretary

On Fri, 3 Mar 2023, 01:57 ADARSH TRIPATHI, <atripathi@es.iitr.ac.in> wrote:

Dear Sir,

I am writing to report an incident that occurred in Azad Bhawan yesterday. Mr. Vijay, a security guard, informed me that Suman Narayan created a nuisance in the bhawan once again. This is not the first time that such an incident has been reported.

As you may recall, one student had previously complained to you about Suman Narayan's behavior in the bhawan, and you had advised him to change his behavior. Unfortunately, it appears that Suman Narayan has not taken any corrective actions.

Yesterday, Mr. Deep Chand, who had duty after Vijay, also reported the same incident to me. I suggested him to call your officer and report the incident to higher authorities.

I have also informed the incident to Bhawan Secretary and Wellness Secretary and requested them to look into the matter.

However, I would like to request you to consider the situation of Suman Narayan. It is possible that he is under a lot of pressure, either from academic or personal issues, that could be causing him to act out. I urge you to take appropriate steps to understand the root cause of his behavior and provide him with necessary support.

While it is important to ensure the safety and security of all students in the bhawan, it is equally important to ensure that Suman Narayan's well-being is not compromised. I hope you will take a compassionate and empathetic approach towards him and offer any assistance that he may require.

2

Thank you for your attention to this matter.

Sincerely,

Adarsh Tripathi
Assistant Warden
Azad Bhawan

DoSW Sign.png.jpg
118 KB

DoSW Sign.png.jpg
118 KB

Wellness_Sec_email_Azad Bhawan.pdf
48 KB

To, (121) CSE Progress Report
ADF/DoAA 09.08.2023 Approved
Academic Section I.I.T. Roorkee Diary No. 8242 Date 14/08/23

23 July, 2023

The HOD (Head of Department)

(Computer Science & Engineering Department)

Sub :- Regarding the discussions on the further proceedings on my dual degree (M-tech + PhD) Program.

Respected Sir,

With due respect, I want to say that I am Suman Narayan, dual degree (M-tech + PhD) student, Enroll : 20535028. Sir I have received the mail from my PhD supervisor Dr. Raksha Sharma mentioning that she has marked "unsatisfactory" in my progress Report of spring semester, 2022-2023 session. I was remarked "Unsatisfactory" in my Autumn semester, 2022-2023 session Progress Report as well. Now this makes two consecutive "Unsatisfactory" remark in successive semesters. Sir, today I have talked to Assistant Registrar, Evaluation, Rajkumar sir. He said still it is possible to continue my PhD program from here if the department allows me to do so & for that I should have a discussion with special SRC. And he also said if in the case, my PhD is terminated ~~then~~ then I will get my M-tech degree provided that the required dissertation work for M-tech degree is submitted. Sir, my point is that I have worked at that extent in the spring semester, 2022-2023 session so that I should be remarked with "satisfactory" grade. I did put my effort specially in spring semester 2022-2023 session so that I should have been given "satisfactory" remark in my Progress Report. So, I request you to please allow me to continue my PhD from here as I have already spent 2 years in my PhD program here and sir its crucial for me to continue my PhD program from here from career perspective also.

Forwarded to Supervisor/SRC chair & committee 8/8/23

Signature: Suman Narayan

Thanks & Regards,
Suman Narayan
Enroll: 20535028

HOD, CSE

SRC meeting was conducted to discuss Mr. Suman Narayan's application. Minutes of the meeting are attached for your information.

(Dr. RAKSHA SHARMA)

I agree with SRC recommendation.

Forwarded
11/8/23

Dean of Academic Affairs IITR.

प्रोफेसर एवं विभागाध्यक्ष/Prof. & Head
कम्प्यूटर विज्ञान एवं इंजी० विभाग
Deptt. of Computer Science & Engg.
भा० प्रौ० सं० रुड़की/I.I.T. Roorkee

SRC Meeting to discuss Mr. Suman Naranya's Application

Date: 04th August 2023, 11AM

Comments by SRC:

1. There was almost no progress made by the student on the research topic in the period of 2 years of integrated PhD program. He was not in the state to appear for the research proposal seminar till June 2023. Considering his academic performance, he was given 'unsatisfactory' on the progress report in December 2022 and in June 2023.

2. As per the attached notice (N. Research/4294/PF, December 2022) from academic section, it was informed to the student that if he gets another 'unsatisfactory' in seqeunce, his Ph.D registration will be terminated. Therefore, SRC cannot recommend change in supervisor. Academic section may look into it.

3. The student has not completed the candidacy requirement for PhD so far. Therefore, as per institute rule, SRC cannot recommend the student for the M.Tech degree. Academic section may look into it.

4. In addition to the poor performance in PhD, it is to be noted that Mr. Suman Narayn was not allowed to stay in campus twice by DoSW on disciplinary grounds for a period of approx 3 months. The mail conversation between warden and DoSW in this regard is attached.

Prof. Manoj Misra (SRC Chairman)

Prof. Brajesh Kaushik (SRC Member)

Prof. Rahul Thakur (SRC Member)

Prof. Debiprasanna Sahoo (Co-supervisor)

Prof. Raksha Sharma (Supervisor)

Appendix 'E'
Item No. Senate / 100.3

शैक्षणिक अफेयर्स कार्यालय
ACADEMIC AFFAIRS OFFICE
भारतीय प्रौद्योगिकी संस्थान रूड़की
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

No. Acd./Evl./ 430 /IRC-64 Dated: September 05, 2023

Mr. Suman Narayan,
En. No.: 20535028
Ph.D. student,
Deptt. of Computer Science& Engineering.

Subject: Reinstatement of academic registration.

On the recommendation of the 64th IRC in its meeting held on August 25th, 2023, the Chairman, Senate, on behalf of the Senate, has not approved your mercy appeal for reinstatement of the academic registration w.e.f. Autumn Semester 2022-23 & Spring Semester 2022-23.

Assistant Registrar
(Evaluation)

Copy through email to:

1. The Director, IIT Roorkee.
2. Head/ Chairperson DRC, Dept. of Computer Sc. & Engg.
3. Dean of Students' Welfare.
4. Dean of Academic Affairs.
5. Associate Dean of Academic Affairs (Evaluation).
6. Assistant Registrar, Finance & Accounts.
7. Supervisor(s) of the student.
8. Student's personal file.

Item No.100.4: To consider the Seat Matrix for admission in the Ph.D. programme in Autumn Semester 2024-2025.

The IRC, in its 68th meeting held on 14.02.2024, considered and recommended the seat matrix **(Appendix-A**) for admission in the Ph.D. programme in Autumn semester 2024-25.

The above is submitted for the consideration and approval of the Senate.

Appendix-1

Category wise vacancy for admission to Ph.D program for Autumn Semester of the session 2024-25 under Institute Assistantship

Deptt/ centre	Faculty position as on 06.02.2024	Total Seats = 5 x core faculty & 2 x Joint faculty	Total Intake						Seats Filled						Vacancy					
			Unreserved	Gen-EWS	OBC	SC	ST	Total Intake	Unreserved	Gen-EWS	OBC	SC	ST	Total filled	Unreserved	GEN-EWS	OBC	SC	ST	Total Vacancy
(Roorkee Campus)																				
Architecture & Planning	15+1*	77	31	8	21	11	6	**77**	16	1	11	6	0	**34**	15	7	10	5	6	**43**
Biosciences & Bioengineering	28+2*	144	58	14	39	22	11	**144**	29	6	14	3	0	**52**	29	8	25	19	11	**92**
Chemical Engineering	23	115	46	12	31	17	9	**115**	17	6	13	11	1	**48**	29	6	18	6	8	**67**
Chemistry	27	135	55	14	36	20	10	**135**	25	5	16	5	2	**53**	30	9	20	15	8	**82**
Civil Engineering	55	275	111	28	74	41	21	**275**	54	13	40	18	8	**133**	57	15	34	23	13	**142**
Computer Science & Engg.	17+1*	87	35	9	23	13	7	**87**	21	0	8	4	0	**33**	14	9	15	9	7	**54**
Design	2+13*	36	14	4	10	5	3	**36**	11	1	3	5	0	**20**	3	3	7	0#	3	**16**
Earth Sciences	27	135	55	14	36	20	10	**135**	14	5	11	0	0	**30**	41	9	25	20	10	**105**
Earthquake Engineering	16	80	32	8	22	12	6	**80**	12	6	10	3	2	**33**	20	2	12	9	4	**47**
Electrical Engineering	34	170	69	17	46	25	13	**170**	29	10	18	11	4	**72**	40	7	28	14	9	**98**
Electronics & Communication Engg.	38	190	77	19	51	29	14	**190**	35	4	26	10	0	**75**	42	15	25	19	14	**115**
Humanities & Social Sciences	29	145	59	14	39	22	11	**145**	23	12	19	11	7	**72**	36	2	20	11	4	**73**
Hydro & Renewable Energy	11	55	22	6	15	8	4	**55**	8	0	6	3	0	**17**	14	6	9	5	4	**38**
Hydrology	9	45	18	5	12	7	3	**45**	13	0	8	5	1	**27**	5	5	4	2	2	**18**
Management Studies	21	105	43	10	28	16	8	**105**	19	8	11	5	0	**43**	24	2	17	11	8	**62**
Mathematics	26	130	53	13	35	19	10	**130**	8	5	5	5	0	**23**	45	8	30	14	10	**107**
Mechanical & Industrial Engg.	46	230	93	23	62	35	17	**230**	52	12	29	9	1	**103**	41	11	33	26	16	**127**
Metallurgical & Materials Engg.	27	135	55	14	36	20	10	**135**	18	0	15	9	0	**42**	37	14	21	11	10	**93**
Physics	38+1*	192	78	19	52	29	14	**192**	40	10	11	4	2	**67**	38	9	41	25	12	**125**
Water Resouces Development & Management	10+1*	52	21	5	14	8	4	**52**	11	3	9	4	1	**28**	10	2	5	4	3	**24**
Total		**2533**	**1025**	**256**	**682**	**379**	**191**	**2533**	**455**	**107**	**283**	**131**	**29**	**1005**	**570**	**149**	**399**	**248**	**162**	**1528**
Centres																				
C-Trans	1+9*	23	9	2	6	4	2	**23**	2	2	3	1	0	**8**	7	0#	3	3	2	**15**
Disaster Mitigation & Management	3+13*	41	17	4	11	6	3	**41**	8	0	2	2	1	**13**	9	4	9	4	2	**28**
Nanotechnology	2+20*	50	20	5	14	7	4	**50**	10	3	3	1	0	**17**	10	2	11	6	4	**33**
Institute Instrumentation Centre	1+2*	9	4	1	2	1	1	**9**	0	0	1	0	0	**1**	4	1	1	1	1	**8**
Centre for Photonics & Quantum Communication Technology (CPQCT)	11*	22	9	2	6	3	2	**22**	3	1	1	1	0	**6**	6	1	5	2	2	**16**
Centre for Space Science and Technology	14*	28	11	3	8	4	2	**28**	0	0	1	0	0	**1**	11	3	7	4	2	**27**
Centre for Sustainable Energy	10*	20	8	2	5	3	2	**20**	1	0	0	1	0	**2**	7	2	5	2	2	**18**
International Centre of Excellence for Dams	15*	30	12	3	8	5	2	**30**	0	0	0	0	0	**0**	12	3	8	5	2	**30**
MFSAIDS	21*	42	17	4	12	6	3	**42**	11	1	4	1	0	**17**	6	3	8	5	3	**25**
Total		**265**	**107**	**26**	**72**	**39**	**21**	**265**	**35**	**7**	**15**	**7**	**1**	**65**	**72**	**19**	**57**	**32**	**20**	**200**
(Saharanpur Campus)																				
Applied Mathematics & Scientific Computing	4+1*	22	9	2	6	3	2	**22**	6	3	1	0	0	**10**	3	0#	5	3	2	**13**
Paper Technology	5	25	10	2	7	4	2	**25**	7	0	3	2	0	**12**	3	2	4	2	2	**13**
Polymer & Process Engg.	11	55	22	6	15	8	4	**55**	16	1	7	4	1	**29**	6	5	8	4	3	**26**
Total		**102**	**41**	**10**	**28**	**15**	**8**	**102**	**29**	**4**	**11**	**6**	**1**	**51**	**12**	**6**	**17**	**9**	**7**	**52**
Grand total		**2900**	**1173**	**292**	**782**	**433**	**220**	**2900**	**519**	**118**	**309**	**144**	**31**	**1121**	**654**	**174**	**473**	**289**	**189**	**1780**
* Joint Faculty																				
Note: PwD seats are 5% horizontal																				
# Currently seats are not available under Institute Assistantship																				

Item No.100.5: To consider the change(s) in Minimum Educational Qualification for admission to M.Tech. programmes received from various Departments/Centres/School.

The IAPC, in its 137th meeting held on 07.02.2024, considered and recommended the proposals received from various Departments/Centres/School for change(s) in Minimum Educational Qualification for admission to M.Tech. Programmes. **(Appendix-A)**

The above is submitted for the consideration and approval of the Senate.

Appendix 'A'
Item No. Senate / 100.5

Changes in the Minimum Educational Qualification for admission to M.Tech. programmes

S. No.	Academic Department/ Centre & (Code)	Academic Programmes	Prog. Code	Minimum Education Qualification (Existing)	Minimum Education Qualification (Proposed)
1.	Metallurgical & Materials Engg.	M.Tech. Industrial Metallurgy	39	B.Tech. degree in Metallurgy/ Materials/ Mechanical/Production / Mining/ Chemical/ Biotechnology/ Textile/ Aerospace Engg or equivalent in relevant discipline. M.Sc. degree in Physics/ Chemistry/ Materials Science/ Environmental/ Nanotechnology or equivalent in relevant discipline.	B.Tech. degree in Metallurgy/ Materials/ Mechanical/ Production / Mining/ Chemical/ Biotechnology/ Ceramics/ Polymer/ Textile/ Aerospace Engg or equivalent in relevant discipline. M.Sc. degree in Physics/ Chemistry/ Materials Science/ Environmental/ Nanotechnology or equivalent in relevant discipline.
		M.Tech. Materials Engg.	40	B.Tech. degree in Metallurgy/Materials / Mechanical/ Mining/ Production/ Chemical/ Biotechnology/ Textile/ Aerospace Engineering or equivalent in relevant discipline. M.Sc. degree in Physics/ Chemistry/ Materials Science/ Environmental/ Nanotechnology or equivalent in relevant discipline.	B.Tech. degree in Metallurgy/Materials / Mechanical/ Mining/ Production/ Chemical/ Biotechnology/ Ceramics/ Polymer/ Textile/ Aerospace Engineering or equivalent in relevant discipline. M.Sc. degree in Physics/ Chemistry/ Materials Science/ Environmental/ Nanotechnology or equivalent in relevant discipline.
2.	Centre for Nanotechnology	M.Tech. Nanotechnology	48	B.Tech. (Met. & Mat. Engg./Mech. Engg./ E&C/ Electronics/ Chemical Engg./ Biotechnology/ Civil/ Biochemical Engineering/ Biomedical Engineering/ Bioengineering/ Polymer Engg/ Polymer Technology/ Pharmaceutical Technology/ Industrial Biotechnology/ Nanotechnology) or equivalent in relevant discipline; M.Sc. (Physics/ Chemistry/ Biotechnology/ Life Science/ nanotechnology), with Maths at 10+2 or higher level.	B.Tech. (Met. & Mat. Engg./Mech. Engg./ E&C/ Electronics/ Electrical/ Chemical Engg./ Biotechnology/ Civil/ Biochemical Engineering/ Biomedical Engineering/ Bioengineering/ Polymer Engg/ Polymer Technology/ Pharmaceutical Technology/ Industrial Biotechnology/ Nanotechnology) or equivalent in relevant discipline; M.Sc. (Physics/ Chemistry/ Biotechnology/ Life Science/ nanotechnology), with Maths at 10+2 or higher level.

3.	Hydrology	M.Tech. Hydrology	33	Bachelor's degree in Civil/ Agricultural Engg./ Hydrology/ Geomatics Engg or equivalent in relevant discipline. OR M.Sc./M.Tech. (Master's) degree in Chemistry/Geology/ Geophysics/ Applied Geology/Applied Geophysics/ Physics/ Meteorology/ Geography/ Atmospheric Physics/Environmental Science with Mathematics in B.Sc. (Bachelor's) course as one of the subjects. OR M.Sc. (Master's) degree in Statistics with Physics or Mathematics at B.Sc. (Bachelor's) level or its equivalent in relevant discipline. OR M.Sc. degree in Mathematics with Physics in B.Sc. or its equivalent in relevant discipline. OR AMIE (Civil) with B.Sc. or Engineering Diploma qualifications with at least 3 years research/teaching /other professional experience in responsible capacities.	Bachelor's degree in Civil/ Agricultural Engg./ Hydrology/ Geomatics Engg / Data Science & Artificial Intelligence/ Environmental Engineering or equivalent in relevant discipline. OR M.Sc./M.Tech. (Master's) degree in Chemistry/Geology/ Geophysics/ Applied Geology/Applied Geophysics/ Physics/ Meteorology/ Geography/ Atmospheric Physics/Environmental Science with Mathematics in B.Sc. (Bachelor's) course as one of the subjects. OR M.Sc. (Master's) degree in Statistics with Physics or Mathematics at B.Sc. (Bachelor's) level or its equivalent in relevant discipline. OR M.Sc. degree in Mathematics with Physics in B.Sc. or its equivalent in relevant discipline. OR AMIE (Civil) with B.Sc. or Engineering Diploma qualifications with at least 3 years research/teaching /other professional experience in responsible capacities.

Item No. 100.6: To consider the eligible GATE disciplines and seat matrix for admission into the M.Tech. programmes through GATE 2024 for the AY 2024-2025.

The Departments/Centres/School were requested to furnish the seat intake and change in GATE disciplines, if any, in accordance to the revised P.G. curriculum approved in 99th Senate,.

Accordingly, the IAPC in its 138th meeting considered and recommended the eligible GATE disciplines and seat matrix for admission into the M.Tech. programmes through GATE 2024 for the AY 2024-2025 **(Appendix-A)** including the mode of intake in the department/centre/school concerned.

The above is submitted for the consideration and approval of the Senate.

Seat Matrix for M.Tech./M.Arch./MURP Admission 2024-25

S.No	Academic Department/ Centre & (Code)	Prog. S.No.	Academic Programmes	Code	Main Gate Discipline(s) and seats					Other GATE Discipline(s) and seats					EWS 10%	PD 5% horizontal	Spl. Wise intake	Total seats in Dept/Centre	Mode of intake
			Name		GATE Discipline Code	UR	OBC	SC	ST	GATE Discipline Code	UR	OBC	SC	ST					
1	Architecture and Planning **(ARD)**	1	M.Arch.	10	AR(12)	5	4	2	1	-					1	1	13	26	Option B
		2	M.U.R.P.	11	AR(10)	4	3	2	1	CE(2)	1	1	0	0	1		13		
2	Hydro and Renewable Energy (HRE)	3	M.Tech. Renewable and Hydro Energy	12	CE(2)	1	1	0	0	AG/CH/EE/EC/ ME/PI/XE/IN (17*)	7	5	3	2	2	2	21	30	Option B
		4	M.Tech. Environmental Management of Rivers and Lakes	13	CE(3)	1	1	1	0	AG/CH/EE/ME/ PI/XE/AR/CY/B T/PH/MA/XL/EY /ES(5)	3	1	0	1	1		9		
3	Chemical Engineering (CHD)	5	M.Tech.Chemical Engineering	14	CH(45)	20	13	8	4	-					5	3	50	50	Option B
4	Civil Engineering (CED)	6	M.Tech. Environmental Engg.	16	CE(10)	4	3	2	1	CH(2)	1	1	0	0	1	5	13	94	Option B
		7	M.Tech. Geospatial Engg.	17	CE/GE(10)	4	3	2	1	AR/CS/EC/EE /AG/MN(4)	2	1	1	0	2		16		
		8	M.Tech. Geotechnical Engg.	18	CE(11)	5	3	2	1	MN (2)	1	1			1		14		
		9	M.Tech. Hydraulic Engg.	19	CE(11)	5	3	2	1						1		12		
		10	M.Tech. Structural Engg	20	CE(23)	10	7	4	2	-					3		26		
		11	M.Tech. Transportation Engg.	21	CE(12)	6	3	2	1	-					1		13		
5	Earthquake Engineering (EQD)	12	M.Tech. Soil Dynamics	22	CE(11)	5	3	2	1	-					1	2	12	41	Option B
		13	M.Tech. Structural Dynamics	23	CE(17)	8	5	3	1	-					2		19		
		14	M.Tech. Seismic Vulnerability and Risk Assessment	24	CE(9)	4	3	1	1	-					1		10		
6	Electrical Engineering (EED)	15	M.Tech. Electric Drives & Power Electronics	25	EE(13)	6	4	2	1	-					2	4	15	77	Option B
		16	M.Tech. Instrumentation and Signal Processing	26	EE(9)	4	3	1	1	EC/IN(4)	2	1	1	0	2		15		
		17	M.Tech. Power System Engg.	27	EE(13)	6	4	2	1	-					2		15		
		18	M.Tech. Systems and Control	28	EE(11)	5	3	2	1	EC/IN(4)	2	1	1	0	2		17		
		19	M.Tech. Electric Vehicle Technology	56	EE(13)	6	4	2	1	-					2		15		
7	Electronics and Communication Engineering (ECD)	20	M.Tech. Communication Systems	29	EC/EE/IN(11)	5	3	2	1	-					1	3	12	69	Option B
		21	M.Tech. R.F. & Microwave Engg	30	EC/EE/PH/IN(10)	5	3	1	1	-					1		11		
		22	M.Tech. Microelectronics and VLSI	31	EC/PH/EE/IN(10)	4	3	2	1	-					1		11		
		23	M.Tech. Terahertz Communication and Sensing	58	EC/PH/EE/IN(18)	4	3	2	1		4	2	1	1	2		20		
		24	M.Tech. Semiconductor Technology	59	EC/PH/EE/IN(13)	5	3	2	1		1	1	0	0	2		15		
8	Computer Science and Engineering (CSD)	25	M.Tech. Computer Science & Engg	32	CS(29)	13	9	5	2	-					3	2	32	32	Option B
9	Hydrology (HYD	26	M.Tech. Hydrology	33	CE/AG(20)	9	6	4	1	GE/DA/XE/GG/ PH/ES(3)	1	1	0	1	2	1	25	25	Option B
10	Mechanical and Industrial Engineering (MED)	27	M.Tech. Mechanical and Industrial Engg	34	ME/PI (58)	26	17	10	5						6	3	64	64	Option A
11	Metallurgical and Materials Engineering (MTD)	28	M.Tech. Industrial Metallurgy	39	MT/AE/BT/CH/CY/ES/ME/MN/PH/ PI/TF/XE (8)	4	2	1	1	-					1	2	9	34	Option B
		29	M.Tech. Materials Engg.	40	MT/AE/BT/CH/CY/ES/ME/MN/PH/ PI/TF/XE (9)	4	3	1	1						1		10		
		30	M.Tech. Computational Materials Engineering	62	MT/AE/BT/CH/CS/CY/DA/ES/ ME/ MN/ PH/PI/TF/XE(13)	6	4	2	1	-					2		15		
12	Paper Technology Saharanpur Campus (PPD)	31	M.Tech. Pulp & Paper Technology	41	CH(7)	3	2	1	1	ME/BT/TF/EY/**XE/XL** (5)	2	2	1	0	1	1	13	24	Option B
		32	M.Tech Packaging Technology	42	CH(5)	2	1	1	1	BT/CY/ME/TF/**XE/XL** (5)	3	2	0	0	1		11		
13	Water Resources Development and Management (WRD)	33	M.Tech. Irrigation Water Management	43	CE/AG(8)	4	2	1	1	-					1	2	9	32	Option B
		34	M.Tech. Water Resources Development	44	CE/EE/ME (12)	5	4	2	1	-					1		13		
		35	M.Tech. Drinking Water and Sanitation	45	CE/AG/ES/AR/CH/ME(9)	4	3	1	1	-					1		10		
14	Physics (PHD)	36	M.Tech. Solid State Electronic Technology	46	PH/EE/EC/MT(9)	4	3	1	1						1	1	10	20	Option B
		37	M.Tech. Photonics	47	PH/EE/EC/MT/IN(9)	4	3	1	1						1		10		
15	Nanotechnology (NTC)	38	M.Tech. Nanotechnology	48	AE/AG/BM/BT/CE/CH/CY/EC/ EE/ES/IN/ME/MN/MT/NM/PH/ PI/XE/XL(8)	4	2	1	1						1	1	9	9	Option B
16	Disaster Mitigation and Management (DMC)	39	M.Tech. Disaster Mitigation and Management	49	CE/GE(6)	3	1	1	1	ME/PI/CS/CH/A R/GG/PH/MA/X L/XE/EY/BT/ (12)	5	4	2	1	2	1	20	20	Option B
17	Transportation Systems (TSC)	40	M.Tech. Transportation Systems Management	50	CE/AR/CS/GE/ME/PI/BT/CH/DA/E C/EE/ES/IN/NM/ST/XE/XH/PE/ AE (13)	6	4	2	1						2	1	**15**	**15**	Option B
18	Biosciences and Bioengineering (BBD)	41	M.Tech.Biomanufacturing	51	BT/XE/CH/CS/ME/ES (13)	6	4	2	1	-					2	2	15	30	Option B
		42	M.Tech Structural and Computational Biology	61	CS/DA/BM/BT/XL (13)	6	4	2	1	-					2		15		
19	Polymer and Process Engg (PPE)	43	M.Tech. Polymer Science and Engg	52	CH/XE(8)	4	2	1	1	CY/ME/PE/PI/T F/**MT/PH** (12)	5	4	2	1	2	1	22	22	Option B
20	Mehta Family School of Data Science and Artificial Intelligence (MFS)	44	M.Tech. Artificial Intelligence	53	CS/EC/EE (13)	6	4	2	1	MA/CE/IN/ME/P H/ST/GE/DA (5)	2	1	1	1	2	2	20	40	Option B
		45	M.Tech Data Science	54	CS/EC/EE/MA/CE/ME/ST/DA (13)	6	4	2	1	AE/BM/BT/CH/C Y/GE/IN/PH/ PI(5)	2	1	1	1	2		20		
21	ICED	46	M.Tech Dam Safety and Rehabiliation	55	CE (7)	3	2	1	1	-					1	1	8	8	Option A
22	Applied Mathematics and Scientific Computing (AMS)	47	M.Tech. Applied Mathematics and Scientific Computing	57	MA/ST/CS/EE/EC/**XE** (18)	8	5	3	2	-					2	1	20	20	Option A
23	Centre for Space and Science Technology	48	M.Tech Space Science and Technology	60	ECE/PH/CY/MA/AE/ME/PI/EE /MT/CE/ GG(13)	6	4	2	1	-					2	1	15	15	Option A
			Total			**278**	**183**	**101**	**56**		**44**	**30**	**14**	**9**	**82**	**43**	**797**	**797**	

*** Including 5 seats sponsored by MNRE**

Item No.100.7: To consider the proposal to introduce a new P.G. Programme by the Department of Metallurgical and Materials Engineering.

A. **Name of Programme:** M.Tech. in Computational Materials Engineering.

B. **Minimum Educational Qualification:** B.Tech. Degree in Metallurgy/ Materials/ Mechanical/ Production / Mining/ Computer Science**/** Chemical/ Biotechnology/ Ceramics/ Polymer/ Textile/ Aerospace Engg. or equivalent in relevant discipline. M.Sc. degree in Physics/ Chemistry/ Materials Science/ Environmental/ Nanotechnology or equivalent

S. No.	Academic Department/ Centre & (Code)	Academic Programmes	Proposed GATE Disciplines	Seats
1.	Metallurgical & Materials Engineering (MTD)	M.Tech. - Computational Materials Engineering	MT/AE/BT/CH/ CS/CY/DA/ES/ ME/MN/PH/PI/ TF/XE	15

The IAPC, in its 137th meeting, held on 07.02.2024, recommended the proposals in principle with an intake of 15 (fifteen); the current reservation criteria shall apply.

The structure of the programme **(Appendix-A)** was considered and recommended by the IAPC in its 138th meeting.

The above is submitted for the consideration and approval of the Senate.

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Appendix 'A'
Item No. Senate / 100.7

Program Code: **XXX M.Tech. (Computational Materials Engineering)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	MTC-501	Mathematics and Numerical Methods	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
2.	MTC-503	Structure of Materials	PCC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
3.	MTC-505	Atomistic Modelling: Methods and Applications	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
4.	MTC-507	Continuum Modelling: Methods and Applications	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
5.	MTC-509	Materials Modelling and Simulation Lab	PCC	3	0	0	6	0	0	-	50	-	-	50
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	MTC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Computational Materials Engineering)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1	MTC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2	MTC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1	MTC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Computational Materials Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MTL-501	Crystal Plasticity Modeling	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MTL-502	Additive Manufacturing: Modeling and Simulation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MTL-503	Materials Informatics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MTL-504	Modeling and simulations of diffusion-based processes in metallurgy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MTL-511	Principles of Solidification	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MTL-512	Engineering Ceramics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	MTL-513	Principles of Materials Selection	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	MTL-514	High Temperature Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	MTL-515	Composite Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	MTL-516	Diffusion in Solids	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	MTL-517	Defects in Crystalline Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	MTL-518	Nanotechnology: Materials & Devices	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	MTL-519	Advanced Steel Technology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	MTL-520	Physical Metallurgy of light metals & alloys	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

15.	MTL-521	Corrosion protection methods	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16.	MTL-522	Microsensors, MEMS & Smart Devices	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17.	MTL-523	Electro-Ceramics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18.	MTL-524	Materials for Renewable Energy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
19.	MTL-525	Biomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
20.	MTL-526	Energy Storage Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
21.	MTL-527	Failure Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
22.	MTL-528	Tribology of Engineering Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
23.	MTL-529	Non-ferrous extraction	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
24.	MTL-530	Materials Modeling and Simulation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
1	MTT-501	Materials for Sustainability	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

Item No. 100.8: To consider the proposal of the Department of Design to offer Two-Degrees (M.Des. and Ph.D.) to the students who register for Ph.D. in the Department of Design subject to fulfillment of few criteria.

The Department Academic Programme Committee of the Department of Design recommended to offer two Degrees (M.Des. and Ph.D.) to the students who register for Ph.D. in the Department of Design and meet certain additional criteria in line with the existing provision created vide Notification No. Acd./1293/Senate-93 dated March 16, 2023. (**Appendix-A**).

The cited notification is in respect of awarding M.Tech. degree while completing Ph.D. Degree.

The IAPC, in its 138th meeting, considered and recommended the above proposal, provided a student earns the course credits (excluding the thesis) required for the M.Des. program offered by the parent department with CGPA 8.5 or more. A student shall be required to fulfil the similar requirements as applicable to the M.Des. programme in lieu of M.Tech. programme while referring to the stated notification.

The above is submitted for the consideration and approval of the Senate.

Appendix 'A'
Item No. Senate / 100.8

ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
Roorkee – 247667

No. Acd./1293 /Senate-93 Dated: March 16 , 2023

Subject: Two-degrees (M.Tech. and Ph.D.) (Item No. 93.6)

The Senate in its 93rd meeting held on 28.12.2022 considered and approved the proposal to offer Two-degrees (M.Tech. and Ph.D.) to students who register for Ph.D. and meet certain additional criteria as follows:

1. A student admitted in a Ph.D. program with a Master's Degree in an allied discipline, will be awarded M.Tech. degree along with the Ph.D. degree, provided the student earns the course credits (excluding the thesis) required for a M.Tech. program, offered by the parent department/centre/school, with CGPA 8.5 or more.

2. A student admitted in a Ph.D. program with a Bachelor's degree will also be awarded M.Tech. degree along with the Ph.D. degree, provided the student meets the requirements as at point (1) above.

3. Candidates shall earn all credits for the course work (excluding thesis) of a M.Tech. Programme offered by the parent department/centre/school. The requirement of earning credits for pre-Ph.D. courses will be waived-off for such candidates.

4. Fellowship will be allowed for five years from the date of initial registration in the Ph.D. program.

5. Other requirements for award of Ph.D. degree shall apply.

6. On meeting the requirements, the students shall be eligible for two degrees (M.Tech. & Ph.D.) on defending their Ph. D. theses.

7. The exit policy relevant to the Ph.D. program shall be applicable to the students who leave the program prior to completion.

Assistant Registrar
(Evaluation)

Copy to (through e-mail):-

1. Chairman Senate & Director
2. All faculty
3. Head of all Departments/ Centres/ School
4. Dean, Academic Affairs
5. ADoAA (IT Systems & Admission)/ (Curriculum)/ (Evaluation)
6. Assistant Registrar (Curriculum)
7. Meeting Section
8. Channel i / AIS (acad.iitr.ac.in) / Academic webpage of iitr.ac.in

Item No. 100.9: To consider the structures for the masters programmes offered by various Departments/Centres/School as per the new PG curriculum to be implemented w.e.f. the AY 2024-2025.

The Senate in its 99th meeting held on 03.01.2024, approved the report of the PG Curriculum Revision Committee (PCRC) as recommended by the IAPC. The new curriculum shall be implemented w.e.f. the academic year 2024-2025. The Senate also directed the Departments/Centres/ Schools to act swiftly for the purpose.

Accordingly, information were sought from the Departments/Centres/ Schools, including the following:

a. 'Mode of Intake' (Option-A/Option-B) for admission to the Departments/Centres / Schools.
b. Programme structures as per the revised curriculum framework for consideration of the IAPC / Senate.
c. Course baskets, new courses as well as updated courses.

The IAPC in its 138th meeting considered and recommended the programme structures as placed at **Appendix-A**.

The above is submitted for the consideration and approval of the Senate.

S.No.	Department/Centre	Programme	Model	Page no.
1.	Applied Mathematics and Scientific Computing	M.Tech. Applied Mathematics and Scientific Computing	2 & 3	37-43
2.	Biosciences and Bioengineering	M.Tech. Biomanufacturing	2	44-47
		M.Tech. Structural and Computational Biology	2	48-50
		M.Sc. Biosciences and Bioengineering	1 (a)	51-54
3.	Chemical Engg.	M.Tech Chemical Engineering	2 & 3	55-60
4.	Civil Engg.	M.Tech. Geospatial Engineering	2	61-63
		M.Tech. Geotechnical Engineering	2	64-66
		M.Tech. Structural Engineering	2	67-70
		M.Tech. Transportation Engineering	2	71-73
		M.Tech. Hydraulics Engineering	2	74-76
		M.Tech. Environmental Engineering	2	77-79
5.	Design	M.Des. (Industrial Design)	2	80-84
6.	Humanities and Social Sciences	M.Sc. Economics	1 (a)	85-88
7.	Metallurgical & Materials Engg.	M.Tech. Industrial Metallurgy	2	89-92
		M.Tech. Materials Engineering	2	93-96
8.	CSST	M.Tech. Space Science and Technology	2	97-100
9.	CoEDMM	M.Tech Disaster Mitigation and Management	2	101-104
10.	ICED	M.Tech. Dam Safety and Rehabilitation	2	105-108
11.	Polymer and Process Engineering	M.Tech. Polymer Science and Engineering	2	109-112
12.	WRD&M	M.Tech. Drinking Water and Sanitation	2	113-116
		M.Tech. Water Resources Development	2	117-122
		M.Tech. Irrigation Water Management	2	123-126
13.	Nanotechnology	M.Tech. Nanotechnology	2	127-130
14.	CTRANS	M.Tech. Transportation Systems Management	2	131-134

DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Applied Mathematics and Scientific Computing)**
Department: **Department of Applied Mathematics and Scientific Computing**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	ASC-501	Applied Optimization Techniques	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
2.	ASC-503	Theory and Applications of Stochastic Processes	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
3.	ASC-505	Numerical Linear Algebra	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
4.	ASC-507	Advanced Data Structures and Algorithms	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	0
5.	ASC-509	Programming Lab	PCC	3	0	0	6	0	3	0	50	0	0	50
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	ASC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Applied Mathematics and Scientific Computing)**
Department: **Department of Applied Mathematics and Scientific Computing**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	ASC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	ASC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	ASC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Applied Mathematics and Scientific Computing)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	ASL-501	Introduction to Approximation Theory	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
2.	ASL-502	Advanced Transform Techniques	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
3.	ASL-503	Applied Soft Computing	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
4.	ASL-504	Applied Operations Research	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
5.	ASL-505	Mathematical Finance	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
6.	ASL-506	Mathematical and Computational Biology	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
7.	ASL-507	Computational Differential Equations	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
8.	ASL-508	Advanced Decision Making	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
9.	ASL-509	Ethics in Artificial Intelligence and Data Science	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
10.	ASL-510	Advanced Integral Equations and Calculus of Variations	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
11.	ASL-511	Advanced Evolutionary Algorithms	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
12.	ASL-512	Logistics and Supply Chain Management	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
13.	ASL-513	Advanced Computational Fluid Dynamics	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
14.	ASL-514	Game Theory	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
15.	ASL-515	Explainable Artificial Intelligence	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0

M.Tech. (Applied Mathematics and Scientific Computing)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	AST-501	Deep Learning	STAR	3	3	0	0	3	0	20-35	0	20-30	40-50	0

DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING (AMS)
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX Master of Science (by Research) in Applied Mathematics and Scientific Computing**
Department: **Department of Applied Mathematics and Scientific Computing**
Year: **I**
Model: **3**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	ASC-501	Applied Optimization Techniques	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
2.	ASC-503	Theory and Applications of Stochastic Processes	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
3.	ASC-505	Numerical Linear Algebra	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	0
4.	ASC-507	Advanced Data Structures and Algorithms	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	0
5.	ASC-509	Programming Lab	PCC	3	0	0	6	0	3	-	50	-	-	50
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.	ASC-751A	Thesis Stage-I	THESIS	13	-	-	-	-	-	-	-	-	100	-
		Total		**17**										

DEPARTMENT OF DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING (AMS)
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX Master of Science (by Research) in Applied Mathematics and Scientific Computing**
Department: **Department of Applied Mathematics and Scientific Computing**
Year: **II**
Model: **3**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	ASC-751B	Thesis Stage-II	THESIS	15	-	-	-	-	-	-	-	-	100	-
		Total		**15**										
Semester-II (Spring)														
1.	ASC-751C	Thesis Stage-III	THESIS	16	-	-	-	-	-	-	-	-	100	-
		Total		**16**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	17	15	16
Total Credits	**66**			

Master of Science (by Research) in Applied Mathematics and Scientific Computing

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	ASL-501	Introduction to Approximation Theory	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
2.	ASL-502	Advanced Transform Techniques	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
3.	ASL-503	Applied Soft Computing	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
4.	ASL-504	Applied Operations Research	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
5.	ASL-505	Mathematical Finance	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
6.	ASL-506	Mathematical and Computational Biology	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
7.	ASL-507	Computational Differential Equations	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
8.	ASL-508	Advanced Decision Making	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
9.	ASL-509	Ethics in Artificial Intelligence and Data Science	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
10.	ASL-510	Advanced Integral Equations and Calculus of Variations	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
11.	ASL-511	Advanced Evolutionary Algorithms	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
12.	ASL-512	Logistics and Supply Chain Management	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
13.	ASL-513	Advanced Computational Fluid Dynamics	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
14.	ASL-514	Game Theory	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0
15.	ASL-515	Explainable Artificial Intelligence	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	0

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Biomanufacturing)**
Department: **Department of Biosciences and Bioengineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	BEC-501	Reaction Engineering in Bioprocesses	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	BEC-503	Unit Operations in Biomanufacturing	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	BEC-505	Microbiology and Biochemistry	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	BEC-507	Biomanufacturing Lab	PCC	3	0	0	6	0	0	-	50	-	-	50
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**17**										
Semester-II (Spring)														
1.		Program Elective I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.	BEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
6.		Science, Technology, and Advance Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
		Total		**21**										

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Biomanufacturing)**
Department: **Department of Biosciences and Bioengineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	BEC-691	Internship Social Activity	ISA	3	-		-	-	-	-	-	-	-	-
2	BEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1	BEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	21	13	14
Total Credits	**65**			

M.Tech. (Biomanufacturing)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	BEL-501	Recombinant DNA Technology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	BEL-502	Fluid Mechanics for Biological Engineers	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	BEL-503	Mass and Heat Transfer operation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	BEL-504	Advanced Bioreactor design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	BEL-505	Biomanufacturing Process Modeling and Simulation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	BEL-506	Computer Aided Design for Bioprocess	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7	BEL-507	Enzyme Production and Industrial Fermentation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8	BEL-508	Biorefinery for Energy and Value-added Products	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9	BEL-509	Biological Regulatory System and Compliance	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10	BEL-510	Plant Design and Technoeconomic Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

M.Tech. (Biomanufacturing)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	BET-501	Bioinformatics	STAR	3	2	0	2	3	0	10-25	25	15-25	30-40	-

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Structural and Computational Biology)**
Department: **Department of Biosciences and Bioengineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	BEC-511	Essentials of Biosciences and Mathematics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	BEC-513	Computer Programming	PCC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
3.	BEC-515	Structural Biology	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	BEC-517	Bioanalytical Techniques	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
5.	BEC-519	SCB Laboratory-I	PCC	3	0	0	6	-	-	-	50	-	-	50
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	BEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Structural and Computational Biology)**
Department: **Department of Biosciences and Bioengineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1	BEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2	BEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1	BEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Structural and Computational Biology)
Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	BEL-511	Protein Design and Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	BEL-512	Molecular Dynamics Simulations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	BEL-513	Structural and Translational Bioinformatics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	BEL-514	Computational Biology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	BEL-478	Biomolecular Interactions	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	BEL-477	Molecular Biophysics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7	BEL-515	Probabilistic Machine Learning	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

M.Tech. (Structural and Computational Biology)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	BET-501	Bioinformatics	STAR	3	2	0	2	3	0	10-25	25	15-25	30-40	-

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Sc. (Biosciences and Bioengineering)**
Department: **Department of Biosciences and Bioengineering**
Year: **I**
Model: **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	BEC-521	Advanced Biochemistry	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	BEC-523	Cell and Molecular Biology	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	BEC-525	Applied Microbiology	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	BEC-527	Genetics	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
5.	BEC-529	Developmental Biology	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.	BEC-531	BSBE Laboratory-I	PCC	4	0	0	8	0	4	-	-	-	-	100
7.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**21**										
Semester-II (Spring)														
1.	BEC-522	Immunology	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	BEC-524	Genetic Engineering	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	BEC-526	Animal Biotechnology	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	BEC-528	Plant Biotechnology	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
5.	BEC-530	BSBE Laboratory-II	PPI	4	0	0	8	0	4	-	-	-	-	100
6.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
7.	BEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Sc. (Biosciences and Bioengineering)**
Department: **Department of Biosciences and Bioengineering**
Year: **II**
Model: **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	E T	PRE
Semester-I (Autumn)														
1.	BEC-533	Gene Regulation	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	BEC-535	Biophysical Techniques	PPI	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.		Program Elective-I	PPI	3	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-II	PPI	3	-	-	-	-	-	-	-	-	-	-
5.		Program Elective-III	PPI	2	-	-	-	-	-	-	-	-	-	-
6.		Program Elective- IV	PPI	2	-	-	-	-	-	-	-	-	-	-
7.	BEC-601	Minor project	PROJECT	2	-	-	-	-	-	-	-	-	100	-
8.	BEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
		Total		**21**										
Semester-II (Spring)														
1.		Program Elective-V	PEC	3	-	-	-	-	-	-	-	-	-	-
2.	BEC-602	Major Project	PROJECT	12	-	-	-	-	-	-	-	-	100	-
		Total		**15**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	21	21	21	15
Total Credits	**78**			

M.Sc. (Biosciences and Bioengineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	BEL-516	Advanced Cell and Tissue Engineering	PEC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2.	BEL-517	Genomics, Proteomics and Metabolomics	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	BEL-518	Neuroscience	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	BEL-519	Translational Bioinformatics	PEC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
5.	BEL-520	Bioprocess Engineering	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.	BEL-521	Molecular Diagnostics	PEC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
7.	BEL-522	Cancer Cell Signaling	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
8.	BEL-523	Drug Discovery and Development	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
9.	BEL-524	Biomedical Engineering	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
10.	BEL-525	Nano-biotechnology	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-

M.Sc. (Biosciences and Bioengineering)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	BET-501	Bioinformatics	STAR	3	2	0	2	3	0	10-25	25	15-25	30-40	-

DEPARTMENT OF CHEMICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Chemical Engineering)**
Department: **Department of Chemical Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	CHC-501	Mathematical Methods in Chemical Engineering	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2	CHC-503	Advanced Transport Phenomena	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3	CHC-505	Advanced Reaction Engineering	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4	CHC-507	Advanced Thermodynamics and Molecular Simulations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	
		Total		**18**										
Semester-II (Spring)														
1		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
6		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
7	CHC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CHEMICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Chemical Engineering)**
Department: **Department of Chemical Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	CHC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2	CHC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1	CHC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Chemical Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	CHL-511	Process Integration	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	CHL-513	Biochemical Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	CHL-515	Computational Fluid Dynamics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	CHL-517	Optimization of Chemical Processes	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	CHL-510	Advanced Process Control	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	CHL-512	Solid and Hazardous Waste Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7	CHL-514	Pollution Control Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8	CHL-516	Kinetics of Polymerization	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9	CHL-518	Waste to Energy Conversion	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10	CHL-520	Oil and Gas Transport	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11	CHL-522	Nanotechnology in Chemical Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12	CHL-524	Microfluidics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13	CHL-526	Supercritical Fluids: Theory and Applications	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14	CHL-528	Introduction to Granular Rheology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15	CHL-530	Drug Delivery	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16	CHL-532	Colloids and Interfacial Science	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17	CHL-534	Novel Separation Techniques	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

18	CHL-536	Design of Experiments and Parameter Estimation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
19	CHL-538	Industrial Safety and Hazard Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
20	CHL-540	Multiphase Flow	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
1	CHT-501	Computational Fluid Dynamics with Tools	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

DEPARTMENT OF CHEMICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX Master of Science (by Research) in Chemical Engineering**
Department: **Department of Chemical Engineering**
Year: **I**
Model: **3**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	CHC-501	Mathematical Methods in Chemical Engineering	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2	CHC-503	Advanced Transport Phenomena	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3	CHC-505	Advanced Reaction Engineering	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4	CHC-507	Advanced Thermodynamics and Molecular Simulations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	
		Total		**18**										
Semester-II (Spring)														
1	CHC-751A	Thesis Stage-I	THESIS	15	-	-	-	-	-	-	-	-	100	-
		Total		**15**										

DEPARTMENT OF CHEMICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX Master of Science (by Research) in Chemical Engineering**
Department: **Department of Chemical Engineering**
Year: **II**
Model: **3**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	CHC-751B	Thesis Stage-II	THESIS	17	-	-	-	-	-	-	-	-	100	-
		Total		**17**										
Semester-II (Spring)														
1	CHC-751C	Thesis Stage-III	THESIS	18	-	-	-	-	-	-	-	-	100	-
		Total		**18**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	15	17	18
Total Credits	**68**			

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Geospatial Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-511	Surveying Measurements and Adjustments	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2.	CEC-513	Principles of Photogrammetry	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEC-515	Principles of Remote Sensing	PCC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
4.	CEC-517	Geodesy and GNSS Surveying	PCC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
5.	CEC-519	Field Survey Camp*	PCC	2	0	0	4	0	0	-	-	-	-	100
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
*** 2 WEEKS CAMP**														
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	0	0	4	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Geospatial Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Geospatial Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-611	Analytical and Digital Photogrammetry	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2.	CEL-511	Digital Image Processing	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEL-613	Thermal, Microwave and Hyperspectral Remote Sensing	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4.	CEL-614	Theory and Applications of GIS	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5.	CEL-616	Geoinformatics for Landuse Surveys	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
6.	CEL-617	Satellite Geodesy	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
7.	CEL-618	Modelling and Analysis of Geospatial Data	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Students should opt for courses in such a way that they earn 03 credits from practical components in the entire programme.

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Geotechnical Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-521	Advanced Numerical Analysis	PCC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
2.	CEC-523	Advanced Soil Mechanics	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEC-525	Engineering Behaviour of Rocks	PCC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
4.	CEC-527	Soil Dynamics and Machine Foundations	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
5.	CEC-529	FEM in Geotechnical Engineering	PCC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	3	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	3	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	3	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	-	-	4	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Geotechnical Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Geotechnical Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-625	Ground Improvement Engineering	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	CEL-516	Constitutive Models for Geological Materials	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	CEL-517	Earthquake Resistant Design of Geotechnical Structures	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	CEL-518	Landslides and Mitigation	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
5.	CEL-519	Foundations on Weak Rocks	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.	CEL-520	Probabilistic Methods in Geomechanics	PEC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
7.	CEL-623	Stability Analysis of Slopes	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
8.	CEL-526	Tunnelling and underground excavation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	CEL-527	Advanced Foundation Engineering	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Structural Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	CEC-541	Continuum Mechanics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	CEC-543	Advanced Concrete Design	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEC-545	Structural Dynamics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	CEC-547	Behavior & Design of Steel Structures	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	0	0	4	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Structural Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Structural Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-545	Finite Element Analysis	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2.	CEL-642	Analysis and Design of Bridges	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEL-538	Tall Buildings	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4.	CEL-644	Analysis and Design of Plates and Shells	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5.	CEL-647	Condition Assessment and Retrofitting of Structures	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
6.	CEL-539	Advanced Concrete Technology	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
7.	CEL-649	Fracture Mechanics in Quasi-Brittle Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	30-50	-
8.	CEL-650	Design of Bridge Substructure	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
9.	CEL-651	Wind Engineering	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Students should opt for PECs in such a way that they earn 03 credits from practical components in the entire programme.

M.Tech. (Structural Engineering)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CET-501	Nonlinear Finite Element Analysis	STAR	3	3	0	0	3	0	20-35	-	20-30	30-50	-
2.	CET-502	Advanced Characterization of Sustainable Building Materials	STAR	3	3	0	0	3	0	20-35	-	20-30	30-50	-
3.	CET-503	Mechanics of Composites	STAR	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
4.	CET-504	Introduction to the theories of inelasticity	STAR	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
5.	CET-505	Engineering Design Optimization and Reliability	STAR	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Transportation Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-551	Traffic Analysis and Design	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	CEC-553	Highway Material Characterisation	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEC-555	Pavement Evaluation and Management	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	CEC-557	Geometric Design	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
5.	CEC-559	Transportation Planning	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	3	0	2	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	3	0	2	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Transportation Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Transportation Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-540	Pavement Analysis and Design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	CEL-666	Transport Economics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	CEL-662	Intersection Design and Control	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	CEL-563	Urban Mass Transit Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	CEL-565	Planning, Design, and Construction of Rural Roads	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	CEL-567	Transportation Systems Analysis	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
7.	CEL-541	Transportation Data Analysis Techniques	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
8.	CEL-546	Advanced Highway Construction and Maintenance	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
9.	CEL-665	Road Traffic Safety	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Students should opt for PECs in such a way that they earn 03 credits from practical components in the entire programme.

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Hydraulics Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-531	Advanced Hydrology	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
2.	CEC-533	Advanced Fluid Mechanics	PCC	4	3	0	2	3	0	15-30	20	15-25	30-40	-
3.	CEC-535	Free Surface Flows	PCC	3	3	0	0	3	0	20-25	0	20-30	40-50	-
4.	CEC-537	Modelling, Simulation and Optimization	PCC	3	2	0	2	3	0	15-30	20	15-25	30-40	-
5.	CEC-539	Ground Water Engineering	PCC	3	3	0	0	3	0	20-35	0	20-30	40-50	-
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	3	0	2	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Hydraulics Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Hydraulics Engineering)
Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-614	Theory and Applications of GIS	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2.	CEL-528	Advanced Numerical Analysis	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	CEL-529	Environmental Hydraulics	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
4.	CEL-530	Climate Change and its Impact on Water Resources	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
5.	CEL-532	Fluvial Hydraulics	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
6.	CEL-632	Hydraulic Structures	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
7.	CEL-507	Systems Engineering	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
8.	CEL-535	Water Resources Systems Planning	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
9.	CEL-536	Irrigation and Drainage	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
10.	CEL-636	Hydro Power Engineering	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
11.	CEL-537	Computational Methods in Fluid Mechanics	PEC	4	3	1	0	3	0	20-35	0	20-30	40-50	-

Students should opt for PECs in such a way that they earn 03 credits from practical components in the entire programme.

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Environmental Engineering)**
Department: **Department of Civil Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-501	Environmental Separation Processes	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	CEC-503	Wastewater Treatment	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	CEC-505	Environmental Chemistry	PCC	5	3	1	2	3	0	15-20	25	15-25	30-40	-
4.	CEC-507	Environmental Modelling and Simulation	PCC	4	3	0	2	3	0	15-20	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	CEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Environmental Engineering)**
Department: **Department of Civil Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	CEC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	CEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	CEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**	-	-	-	-	-	-	-	-	-	-

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Environmental Engineering)
Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	CEL-602	Water Quality Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	CEL-603	Industrial and Hazardous Waste Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	CEL-604	Environmental Impact and Risk Assessment	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	CEL-606	Environmental Remediation of Contaminated Sites	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	CEL-506	Ground Water Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	CEL-614	Theory and Application of GIS	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
7.	CEL-507	Systems Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	CEL-508	Environmental Nanotechnology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	CEL-509	Statistics and Instrumentation for Environmental Engineers	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
10.	CEL-504	Air Pollution and Control	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
11.	CEL-605	Solid Waste Management	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Students should opt for PECs in such a way that they earn 03 credits from practical components in the entire programme.

DEPARTMENT OF DESIGN
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Des. (Industrial Design)**
Department: **Department of Design**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	DEC-501	Introduction to Design and Prototyping**	PCC	Audit	-	-	-	-	-	-	-	-	-	-
2.	DEC-503	Design Methodology	PCC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
3.	DEC-505	Design Thinking	PCC	3	1	0	4	2	0	10-25	25	15-25	-	30-40
4.	DEC-507	Elements and Principles of Visual Design	PCC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
5.	DEC-509	Human Factor Design	PCC	3	1	2	0	2	0	20-35	-	20-30	40-50	-
6.	DEC-511	Materials and Manufacturing	PCC	2	1	0	2	2	0	10-25	25	15-25	-	30-40
7.	DEC-513	User Experience Design	PCC	2	1	0	2	2	0	10-25	25	15-25	-	30-40
8.		Social Sciences Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
** This is a foundation course (L=15; T=5; P=10) will be conducted during the first two weekends after the commencement of classes to give orientation of Design course.														
Semester-II (Spring)														
1.		Program Elective I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective III	PEC	3/4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective IV	PEC	3/4	-	-	-	-	-	-	-	-	-	-
5.	DEC-700	Design Seminar	SEM	2	-	-	4	-	-	-	100	-	-	-
6.		Science, Technology, and Advanced Research-Tools	STAR	3	-	-	-	-	-	-	-	-	-	-
		Total		**19-21**										

DEPARTMENT OF DESIGN
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Des. (Industrial Design)**
Department: **Department of Design**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	DEC-691	Internship Social Activity	ISA	5	-	-	-	-	-	-	-	-	100$$	-
2	DEC-701A	Thesis Stage-I	Thesis	10	-	-	-	-	-	-	-	-	100	-
		Total		**15**										
$$ Evaluation scheme: (Industry: 40 + Institute: 60) Internship will be completed during summer break.														
Semester-II (Spring)														
1	DEC-701B	Thesis Stage-II	Thesis	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	19-21	15	14
Total Credits	**66-68**			

M.Des. (Industrial Design)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DEL-501	Form Design	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
2	DEL-502	Sensors, Actuators and IOT	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
3	DEL-503	Computer Aided Design	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
4	DEL-504	Rapid Prototyping	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5	DEL-505	Artificial Intelligence and Data Science	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	DEL-506	Interaction Design	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
7	DEL-507	Research Methods in Design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8	DEL-508	Inter-Disciplinary Design	PEC	4	3	0	2/2	3	0	15-30	20	15-25	30-40	-
9	DEL-509	Design for Sustainability	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-
10	DEL-510	CAE in Product Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
11	DEL-511	Reverse Engineering	PEC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
12	DEL-512	Product Planning and Marketing	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
13	DEL-513	Business and Service Innovation	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
14	DEL-514	Business Valuation	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-
15	DEL-515	Intellectual Property Management	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-
16	DEL-516	Legal Standards/IPR	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
17	DEL-517	Systems Thinking	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
18	DEL-518	Mobility Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
19	DEL-519	Service Design	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
20	DEL-520	Research into Design	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-
21	DEL-521	Bio Inspired Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
22	DEL-522	Computer Game Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
23	DEL-523	Design for Society	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
24	DEL-524	Graphic Design	PEC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
25	DEL-525	Product Detailing	PEC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
26	DEL-526	Contemporary Visual Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
27	DEL-527	Representation Techniques for Animation	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
28	DEL-528	Visual Narrative	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
29	DEL-529	Product Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
30	DEL-530	Manufacturing Guidelines for Product Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
31	DEL-531	Design for Social Inclusion	PEC	3	2	0	2/2	2	0	15-30	20	15-25	30-40	-
32	DEL-532	Introduction to Emotional Design	PEC	3	2	1	0	2	0	20-35	-	20-30	40-50	-
33	DEL-533	Technology Management	PEC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
34	DEL-534	Product Innovation Management	PEC	2	2	0	0	2	0	20-35	-	20-30	40-50	-

M.Des. (Industrial Design)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DET-501	User Experience and Interface Design	STAR	3	2	0	2	2	0	10-25	25	15-25	30-40	-

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Sc. (Economics)**
Department: **Department of Humanities and Social Sciences**
Year: **I**
Model: **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	HSC-501	Microeconomics-I	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	HSC-503	Macroeconomics-I	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	HSC-505	Basic Econometrics	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4.	HSC-507	Development Economics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	HSC-509	Mathematical Economics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**22**										
Semester-II (Spring)														
1.	HSC-502	Microeconomics-II	PPI	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	HSC-504	Macroeconomics-II	PPI	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	HSC-506	Public Policy: Theory and Practice	PPI	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.		Program Elective-I	PPI	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	HSC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Sc. (Economics)**
Department: **Department of Humanities and Social Sciences**
Year: **II**
Model: **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	HSC-511	Financial Economics: Theory and Practice	PPI	4	3	0	2	3	0	10-25	25	15-25	30-40	-
2.		Program Elective-II	PPI	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PPI	4	-	-	-	-	-	-	-	-	-	-
4.	HSC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
5.	HSC-601	Project Stage-I	PROJECT	4	-	-	-	-	-	-	-	-	100	-
		Total		**19**										
Semester-II (Spring)														
1.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-V	PEC	4	-	-	-	-	-	-	-	-	-	-
3.	HSC-602	Project Stage-II	PROJECT	6	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	22	21	19	14
Total Credits	**76**			

M.Sc. (Economics)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	HSL-521	International Economics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	HSL-522	Environmental Economics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	HSL-523	Advanced Econometrics	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4.	HSL-524	Money, Banking and Financial Markets	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	HSL-532	Labour Economics : Theory & Practical	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	HSL-525	Advanced Topics in Growth Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	HSL-526	Efficiency and Productivity Analysis	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
8.	HSL-527	Agriculture Economics & Policy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	HSL-528	Handling Large-scale Survey Data	PEC	4	3	0	2	3	0	10-25	25	10-25	30-40	-
10.	HSL-529	Social and Economic Networks	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
11.	HSL-530	Analytics for Business and Society	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
12.	HSL-531	Financial Econometrics	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Students should opt for PECs in such a way that they earn 03 credits from practical components in the entire programme.

M.Sc. (Economics)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	HST-501	Statistical Application for Behavioural and Social Research	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	HSS-501	Economic and Business Environment	SSC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2.	HSS-502	Sociology of Work	SSC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
3.	HSS-503	Learning and Memory	SSC	2	2	0	0	2	0	20-35	-	20-30	40-50	-

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Industrial Metallurgy)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	MTC-503	Structure of Materials	PCC	4	3	1	0	3	0	20-35		20-30	40-50	-
2.	MTC-513	Characterization of Materials	PCC	3	0	0	6	0	0	-	50	-	-	50
3.	MTC-515	Phase Transformations	PCC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
4.	MTC-517	Heat and Mass Transfer	PCC	4	3	1	0	3	0	20-35	0	20-30	40-50	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**17**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	MTC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Industrial Metallurgy)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	MTC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	MTC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	MTC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	21	13	14
Total Credits	**65**			

M.Tech. (Industrial Metallurgy)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MTL-531	Non Destructive testing	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MTL-532	Casting and Solidification	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MTL-533	Joining of Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MTL-534	Theory of Metal Forming	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MTL-515	Composite Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MTL-535	Powder Metallurgy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	MTL-513	Principles of Materials Selection	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	MTL-527	Failure Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	MTL-528	Tribology of Engineering Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	MTL-521	Corrosion Protection Methods	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	MTL-501	Crystal Plasticity Modeling	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	MTL-502	Additive Manufacturing: Modeling and Simulation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	MTL-503	Materials Informatics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	MTL-504	Modeling and simulations of diffusion-based processes in metallurgy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

M.Tech. (Industrial Metallurgy)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MTT-501	Materials for Sustainability	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Materials Engineering)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	MTC-503	Structure of Material	PCC	4	3	1	0	3	0	20-35		20-30	40-50	-
2.	MTC-513	Characterization of Materials	PCC	3	0	0	6	0	0	-	50	-	-	50
3.	MTC-521	Mechanical Behavior of Material	PCC	4	3	1	0	3	0	20-35		20-30	40-50	-
4.	MTC-523	Advanced Thermodynamics	PCC	4	3	1	0	3	0	20-35		20-30	40-50	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**17**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	MTC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Materials Engineering)**
Department: **Department of Metallurgical and Materials Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	MTC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	MTC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	MTC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	21	13	14
Total Credits	**65**			

M.Tech. (Materials Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MTL-512	Engineering Ceramics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MTL-515	Composite Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MTL-536	Thin Film Technology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MTL-537	Electronic Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MTL-514	High Temperature Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MTL-525	Biomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	MTL-513	Principles of Materials Selection	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	MTL-538	Nanomaterials and Applications	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	MTL-528	Tribology of Engineering Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	MTL-526	Energy Storage Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	MTL-501	Crystal Plasticity Modeling	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12	MTL-502	Additive Manufacturing: Modeling and Simulation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	MTL-503	Materials Informatics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	MTL-504	Modeling and simulations of diffusion-based processes in metallurgy	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

M.Tech. (Materials Engineering)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MTT-501	Materials for Sustainability	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

CENTRE FOR SPACE SCIENCE AND TECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Space Science and Technology)**
Centre: **Centre for Space Science and Technology**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	SSC-501	Introduction to Space Sciences	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	SSC-503	Experimental Techniques for Space Exploration	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.	SSC-505	Launch Vehicle Technology	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	SSC-507	Satellite System Technology	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2										
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	SSC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

CENTRE FOR SPACE SCIENCE AND TECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Space Science and Technology)**
Centre: **Centre for Space Science and Technology**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	SSC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	SSC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	SSC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Space Science and Technology)
Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	SSL-501	Materials for Extreme Conditions	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2	SSL-502	Antennas for Space Applications	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	SSL-503	Observing & Predicting Climate of Planets	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	SSL-504	Orbital Mechanics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	SSL-505	Space Mission Design and Optimization	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	SSL-506	Terrestrial Planets & Their Climate	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	SSL-507	Astrochemistry	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	SSL-508	Navigation, Guidance and Control of Launch Vehicles and Satellites	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	SSL-509	Rocket Propulsion	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	SSL-510	Space Economics and Policy	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	SSL-511	Exploration of Planetary Interiors	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	SSL-512	Statistics and Machine Learning for Space Studies	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	SSL-513	Satellite Meteorology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	SSL-514	Astrobiology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
15.	MTL-512	Engineering Ceramics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	ECL-631	RF Receiver Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
17.	ECL-550	Radar Signal Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	ESL-XXX	Planetary Science and Space Exploration	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
19.	PHL-514	Solar Terrestrial Physics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

M.Tech. (Space Science and Technology)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	SST-501	Space Exploration and Applications	STAR	3	2	1	0	3	-	20-35	-	20-30	40-50	-

CENTRE OF EXCELLENCE IN DISASTER MITIGATION & MANAGEMENT

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Disaster Mitigation and Management)**
Centre: **Centre of Excellence in Disaster Mitigation & Management**

Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	DMC-501	Introduction to Disaster Mitigation and Management	PCC	3	3	0	0	-	-	20-35	-	20-30	40-50	-
2.	DMC-503	Geodata Processing Techniques and Models	PCC	4	3	0	2	-	-	10-25	25	15-25	30-40	-
3.	DMC-505	Natural Hazards: Processes, Monitoring & Prediction	PCC	4	3	0	2	-	-	10-25	25	15-25	30-40	-
4.	DMC-507	Climate Change: Impact, Adaptation and Mitigation	PCC	4	2	1	2	-	-	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**17**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	DMC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

Centre of Excellence in Disaster Mitigation & Management

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Disaster Mitigation and Management)**
Department: **Centre of Excellence in Disaster Mitigation & Management**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1	DMC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2	DMC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1	DMC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	21	13	14
Total Credits	**65**			

M.Tech. (Disaster Mitigation & Management)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DML-501	Analysis of Hydrological Extremes	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	DML-502	Landslide Hazard Assessment and Mitigation	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
3	DML-503	Cyclone and Wind Engineering	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	DML-504	Disaster Preparedness and Mitigation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	DML-505	Weather and Climate Modelling	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
6	DML-506	Advanced Landslide Analysis	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
7	DML-507	Disaster Induced Risks	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8	DML-508	Instrumentation and Measurements	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
9	DML-509	Application of Geospatial Data for Disaster Mitigation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10	DML-510	Vulnerability and Risk Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11	DML-511	Manmade and Biological Disasters Detection and Mitigation	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
12	DML-512	Socio-Economic Aspects of Disaster Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13	DML-513	Managerial and Financial Aspects of Disaster Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14	DML-514	Industrial/Manmade Disasters and Safety	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15	DML-515	Nuclear Physics for Disaster Mitigation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

16	DML-516	Cryosphere Hazards	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17	DML-517	Seismic Hazards	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18	DML-518	Data Analytics for Disaster Management	PEC	4	2	1	2	3	0	10-25	25	15-25	30-40	-
19	DML-519	Fire Science & Engineering	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
1	DMT-501	AI/ML in Disaster Management	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

INTERNATIONAL CENTRE OF EXCELLENCE FOR DAMS
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Dam Safety and Rehabilitation)**
Department: **International Centre of Excellence for Dams**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	DSC-501	Hydrologic Safety Evaluation of Dams	PCC	3	2	1	0	-	-	20-35	-	20-30	40-50	-
2.	DSC-503	Reservoir Sedimentation and Silt Management	PCC	3	2	0	2	-	-	10-25	25	15-25	30-40	-
3.	DSC-505	Seepage through Dams	PCC	3	2	0	2	-	-	10-25	25	15-25	30-40	-
4.	DSC-507	Geotechnical safety evaluation of Dams	PCC	3	2	0	2	-	-	10-25	25	15-25	30-40	-
5.	DSC-509	Seismic Hazard Assessment for dams	PCC	3	2	0	2	-	-	10-25	25	15-25	30-40	-
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**17**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	3	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	3	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	3	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	3	-	-	-	-	-	-	-	-	-	-
5.		Program Elective-V	PEC	3	-	-	-	-	-	-	-	-	-	-
6.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
7.	DSC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**20**										

INTERNATIONAL CENTRE OF EXCELLENCE FOR DAMS
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Dam Safety and Rehabilitation)**
Department: **International Centre of Excellence for Dams**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1	DSC-691	Internship Social Activity	ISA	5	-	-	-	-	-	-	-	-	-	-
2	DSC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**15**										
Semester-II (Spring)														
1	DSC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	20	15	14
Total Credits	**66**			

M.Tech. (Dam Safety and Rehabilitation)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DSL-501	Assessing and Managing Risks Associated with Dams	PEC	3	2	1	0	3	0	20-35	-	20-30	40-50	-
2	DSL-502	Disaster Management and EAPs for dams	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
3	DSL-503	Dam Safety Surveillance, Instrumentation and Monitoring	PEC	3	2	1	0	3	0	20-35	-	20-30	40-50	-
4	DSL-504	Environmental Monitoring and Impact Assessment of Dams	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
5	DSL-505	Earthquake Geotechnical Engineering	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
6	DSL-506	Geospatial Techniques for Monitoring of Dams	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
7	DSL-507	Hydraulic design of spillways and energy dissipators	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
8	DSL-508	Contract and Financial Management	PEC	3	2	1	0	3	0	20-35	-	20-30	40-50	-
9	DSL-509	Seismic Safety Evaluation of Dams	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-
10	DSL-510	Planning and Design of Hydro-Mechanical Components in Dams	PEC	3	2	1	0	3	0					
11	DSL-511	Ground Improvement and Geo-synthetics	PEC	3	2	0	2	3	0	10-25	25	15-25	30-40	-

M.Tech. (Dam Safety and Rehabilitation)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DST-501	Analysis of Dam Instrumentation Data	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	DSS-501	Sustainable Tourism around Dams	SSC	2	1	0	2	-	-	10-25	25	15-25	30-40	-

DEPARTMENT OF POLYMER AND PROCESS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Polymer Science and Engineering)**
Department: **Department of Polymer and Process Engineering**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1	PEC-501	Polymeric Materials & their properties	PCC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2	PEC-503	Polymer Rheology and Physics	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3	PEC-505	Macromolecular Chemistry	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4	PEC-507	Elastomer Technology and Processing	PCC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
5	PEC-509	Advanced Polymer Characterization	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6	PEC-511	Polymer Synthesis, Processing and Characterization Lab	PCC	3	0	0	6	0	3	-	50	-	-	50
7		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1		Program Elective- I	PEC	4	-	-	-	-	-	-	-	-	-	-
2		Program Elective- II	PEC	3	-	-	-	-	-	-	-	-	-	-
3		Program Elective- III	PEC	3	-	-	-	-	-	-	-	-	-	-
4		Program Elective- IV	PEC	3	-	-	-	-	-	-	-	-	-	-
5		Program Elective- V	PEC	3	-	-	-	-	-	-	-	-	-	-
6		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
7	PEC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF POLYMER AND PROCESS ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Polymer Science and Engineering)**
Department: **Department of Polymer and Process Engineering**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1	PEC-691	ISA	ISA	4	-	-	-	-	-	-	-	-	-	-
2	PEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**14**										
Semester-II (Spring)														
1	PEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	14	14
Total Credits	**67**			

M.Tech. (Polymer Science and Engineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1	PEL-501	Advanced Engineering Mathematics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	PEL-502	Statistical Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	PEL-503	Process Equipment Design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	PEL-504	Advanced Optimization Techniques	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	PEL-505	Polymer Blends and Composites	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	PEL-506	Polymer Colloids	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
7	PEL-507	Product Standardizations and Regulatory Standards in Polymers	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
8	PEL-508	Molecular Modelling and Simulation	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
9	PEL-509	Computer Aided Polymer Product Design	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
10	PEL-510	Bio and Bio-medical Polymers	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
11	PEL-511	Heat and Mass Transfer in Polymeric Materials	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
12	PEL-512	Quality Management	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
13	PEL-513	Functional Polymer	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
14	PEL-514	High Performance and Conducting Polymers	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
15	PEL-515	Polymer Film & Fibre Technology	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
16	PEL-516	Polymer Degradation & Recycling	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
17	PEL-517	Advanced Polymeric Technology	PEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-

18	PEL-518	Polymer Processing	PEC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
19	PEL-519	Polymer Reaction Engineering	PEC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
20	PEL-520	Advanced Process Control	PEC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-
21	PEL-521	Polymeric Membrane Technology	PEC	3	3	0	2/2	3	0	15-30	20	15-25	30-40	-

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
1	PET-501	Polymers for Advanced Applications	STAR	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2	PET-502	Membrane Fabrication & Applications	STAR	3	3	0	0	3	0	20-35	-	20-30	40-50	-

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. Drinking Water and Sanitation**
Department: **Department of Water Resources Development and Management**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	WRC-503	Water Resource Planning and Management	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRC-543	Drinking Water and Sanitation Sustainability	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.	WRC-545	Water sanitation, Hygiene, and Infrastructural Management	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	WRC-506	Rural and Urban Water Supply	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	WRC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. Drinking Water and Sanitation**
Department: **Department of Water Resources Development and Management**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	WRC-691	Internship Social Activity	ISA	4	-	-	-	-	-	-	50	-	50	-
2.	WRC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**14**										
Note: Students can take 1 or 2 audit courses as adv issued by the supervisor if required.														
Semester-II (Spring)														
1.	WRC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	14	14
Total Credits	**67**			

M.Tech. Drinking Water and Sanitation

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRL-536	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRL-537	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRL-538	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRL-542	Ecohydrological Modeling and Sustainability	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.	WRL-552	Drinking-Water for Low-Income Societies	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRL-553	Wastewater and Fecal Sludge Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRL-554	Resilience, Shocks, and Emergencies	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRL-555	Management and Operation of Water Utilities	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRL-556	Water and Wastewater Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRL-558	Flow Hydraulics and Urban Drainage	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WRL-535	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRL-560	Circular Water Economy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRL-561	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRL-507	River Engineering	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-

M.Tech. Drinking Water and Sanitation (DWS)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRT-501	Artificial Intelligence (AI) & Machine Learning (ML) for Water Resources	STAR	3	2	0	2	3	-	10-25	25	15-25	30-40	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRS-501	Water and Society	SSC	2	2	0	0	3	-	20-35	-	20-30	40-50	-

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Water Resources Development)/P.G. Diploma in Water Resources Development (WRD)**
Department: **Department of Water Resources Development and Management**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.		Program Core Course 1	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.		Program Core Course 2	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.		Program Core Course 3	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.		Program Core Course 4	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	WRC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

Note: P.G. Diploma course in WRD shall be of One Year duration comprising of semesters I and II only, with a minimum credit of 39

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Water Resources Development)**
Department: **Department of Water Resources Development and Management**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	WRC-691	Internship Social Activity	ISA	4	-	-	-	-	-	-	50	-	50	-
2.	WRC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**14**										
Semester-II (Spring)														
1.	WRC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	14	14
Total Credits	**67**			

M.Tech. (Water Resources Development)/P.G. Diploma in Water Resources Development (WRD)

Programme Core Subjects (for CE/EE/ME backgrounds)

S.No.	Subject Code	Course Title	Subject Area	Credits	Contact Hours/Week L	T	P	Exam Duration Theory	Practical	Relative Weight(%) CWS	PRS	MTE	ETE	PRE
For Civil Background														
1.	WRC-501	Design of Water Resources Structures	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	WRC-503	Water Resources Planning and Management	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	WRC-505	Applied Hydrology	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	WRC-507	System Design Techniques	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
For Electrical Background														
1.	WRC-511	Hydro Generating Equipment	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
2.	WRC-513	Hydropower System Planning	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	WRC-515	Project Planning and Management	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	WRC-517	Hybrid Renewable Energy System	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
For Mechanical Background														
1.	WRC-513	Hydropower System Planning	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	WRC-521	Design of Hydro Mechanical Equipment	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.	WRC-515	Project Planning and Management	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	WRC-517	Hybrid Renewable Energy System	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-

M.Tech. (Water Resources Development)/P.G. Diploma in Water Resources Development

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRL-501	Geotechnical Engineering	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRL-502	Hydropower and Appurtenant Works	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRL-503	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRL-504	Masonry and Concrete Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRL-505	Irrigation Structures	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRL-507	River Engineering	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
7.	WRL-508	Finite Element Methods	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRL-509	Water Resources System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRL-510	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRL-511	Groundwater Hydrology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	WRL-512	Climate Change and Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRL-513	Substation and Transmission line Design	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRL-514	Installation Maintenance and Testing of Hydro Generating Equipment	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRL-515	Maintenance Management in Power Plants	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WRL-516	Power System Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
16.	WRL-517	Electrical Design of Hydro Power Station	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
17.	WRL-518	Power System Operation and Control	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

18.	WRL-519	Control and Instrumentation of Hydro Power Plant	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
19.	WRL-520	Power System Analysis	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
20.	WRL-521	Power System Reliability	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
21.	WRL-522	Insulating Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
22.	WRL-523	Planning and Design of Small Hydro Power Schemes	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
23.	WRL-524	Power Electronics Controlled Hydro-Electric Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
24.	WRL-525	Modelling and Simulation of Hydro-Electric Energy Systems	PEC	4	1	1	4	2	2	10-25	20	15-25	30-40	20
25.	WRL-526	Synchronous and Asynchronous Generators Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
26.	WRL-527	Power Electronics Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
27.	WRL-528	Control and Instrumentation Laboratory	PEC	4	1	-	6	-	3	-	50	-	-	50
28.	WRL-529	Design of Construction Job Facilities	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
29.	WRL-530	Construction Plant Machinery	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
30.	WRL-531	Air Conditioning and Ventilation	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
31.	WRL-532	Construction Techniques	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
32.	WRL-534	Soil and Agronomy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
33.	WRL-535	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
34.	WRL-536	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
35.	WRL-537	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
36.	WRL-538	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
37.	WRL-539	Remote Sensing and GIS Applications in Water Systems	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
38.	WRL-540	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
39.	WRL-542	Ecohydrological Modeling and Sustainability	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-

M.Tech. (Water Resources Development)/P.G. Diploma in Water Resources Development (WRD)

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRT-501	Artificial Intelligence (AI) & Machine Learning (ML) for Water Resources	STAR	3	2	0	2	3	-	10-25	25	15-25	30-40	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRS-501	Water and Society	SSC	2	2	0	0	3	-	20-35	-	20-30	40-50	-

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management (IWM)**
Department: **Department of Water Resources Development and Management**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	WRC-503	Water Resources Planning and Management	PCC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	WRC-533	Design of Irrigation Structures and Drainage Works	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
3.	WRC-535	On Farm Development	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
4.	WRC-537	Principles and Practices of Irrigation	PCC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	WRC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

Note: P.G. Diploma course in IWM shall be of One Year duration comprising of semesters I and II only, with a minimum credit of 39

DEPARTMENT OF WATER RESOURCES DEVELOPMENT AND MANAGEMENT
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management (IWM)**
Department: **Department of Water Resources Development and Management**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	WRC-691	Internship Social Activity	ISA	4	-	-	-	-	-	-	50	-	50	-
2.	WRC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**14**										
Semester-II (Spring)														
1.	WRC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	14	14
Total Credits	**67**			

M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRL-503	Earth and Rockfill Dams	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	WRL-510	Environmental Impact Assessment of Water Resource Projects	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	WRL-512	Climate Change and Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	WRL-534	Soil and Agronomy	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	WRL-535	Renewable Energy System Technology	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	WRL-536	Water Quality Monitoring and Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	WRL-537	Groundwater Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	WRL-538	Watershed Development and Management	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	WRL-540	Sustainable Water Resources	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	WRL-542	Ecohydrological Modeling and Sustainability	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
11.	WRL-544	Operation Maintenance and Management of Irrigation Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	WRL-545	Water and Land Laws	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	WRL-546	Rural Sociology and Irrigation Economics	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
14.	WRL-547	Evaluation of Irrigation Project	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
15.	WRL-548	Theory of Seepage	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
16.	WRL-549	Cropping System Modeling	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
17.	WRL-550	Environmental Impact of Irrigated Agriculture	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
18.	WRL-551	Smart Irrigation Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

M.Tech. (Irrigation Water Management)/P.G. Diploma in Irrigation Water Management

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRT-501	Artificial Intelligence (AI) & Machine Learning (ML) for Water Resources	STAR	3	2	0	2	3	-	10-25	25	15-25	30-40	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	WRS-501	Water and Society	SSC	2	2	0	0	3	-	20-35	-	20-30	40-50	-

CENTRE FOR NANOTECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Nanotechnology)**
Centre: **Centre for Nanotechnology**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	NTC-501	Nanoscale Materials	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	NTC-503	Advanced Characterizations and Analytical Techniques	PCC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	NTC-505	Emerging Applications of Nanomaterials	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	NTC-507	Nanoscale Modelling and Simulation	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5.	NTC-509	Laboratory	PCC	2	0	0	4	0	4	-	50	-	-	50
6.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and, Advance Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	NTC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**21**										

CENTRE FOR NANOTECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Nanotechnology)**
Centre: **Centre for Nanotechnology**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	NTC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	NTC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	NTC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	21	13	14
Total Credits	**66**			

M.Tech. (Nanotechnology)
Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	NTL-501	Structural Analysis of Nanomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	NTL-502	Supramolecular Chemistry of Nanomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	NTL-503	Physics of Nanomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	NTL-504	Biomedical Nanotechnology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	NTL-505	Electronic Properties and Measurement Techniques of Nanomaterials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	NTL-506	Nanoscale Fabrication Techniques	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	NTL-507	Environmental Nanotechnology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	NTL-508	Surface Engineering of Nanoscale Materials	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

M.Tech. (Nanotechnology)
Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	NTT-501	Technology of Nanoscale Devices	STAR	3	3	0	0	3	0	20-35	-	20-30	40-50	-
2.	NTT-502	Quantum Materials	STAR	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3.	NTT-503	AI and ML for Nanotechnology	STAR	3	2	0	2	3	0	10-25	25	15-25	30-40	-

Social Sciences Course Basket

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	NTS-501	Safety and Ethics in Nanotechnology Research	SSC	2	2	0	0	3	0	20-35	-	20-30	40-50	-

CENTRE FOR TRANSPORTATION SYSTEMS
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Transportation Systems Management)**
Centre: **Centre for Transportation Systems**
Year: **I**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	TSC-501	Introduction to Transportation Infrastructure Planning	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	TSC-503	Transportation Systems Analytics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	TSC-505	Public Transport Operations & Management	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	TSC-507	Transportation Planning & Management Studio	PCC	4	0	0	8	0	0	-	50	-	-	50
5.		Social Science Course	SSC	2	-	-	-	-	-	-	-	-	-	-
		Total		**18**										
Semester-II (Spring)														
1.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-III	PEC	3/4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-IV	PEC	3/4	-	-	-	-	-	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-	-	-	-	-	-
6.	TSC-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**19-21**										

CENTRE FOR TRANSPORTATION SYSTEMS
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XXX M.Tech. (Transportation Systems Management)**
Centre: **Centre for Transportation Systems**
Year: **II**
Model: **2**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester-I (Autumn)														
1.	TSC-691	Internship Social Activity	ISA	3	-	-	-	-	-	-	-	-	-	-
2.	TSC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-	-	-	-	100	-
		Total		**13**										
Semester-II (Spring)														
1.	TSC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-	-	-	-	100	-
		Total		**14**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	19-21	13	14
Total Credits	**64-66**			

M.Tech. (Transportation Systems Management)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	TSL-501	Design & Rejuvenation of Urban Transport	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	TSL-502	Advance Transportation Analytics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	TSL-503	Freight Transportation Planning & Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	TSL-504	Management of Transportation Projects	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	TSL-505	Planning and Management of Non-motorized Transport	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	TSL-506	Active Mobility and Health	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	TSL-507	Geographical Information System (GIS) Applications in Transportation Systems	PEC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
8.	TSL-508	Intelligent Transportation System	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	TSL-509	Sustainable Transportation Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	TSL-510	Ropeway Infrastructure Planning & Design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	TSL-511	Multimodal Transportation	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	TSL-512	Inland Navigation and Water Transport	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

13.	TSL-513	Advance Transport Planning	PEC	3	2	1	0	3	0	20-35	-	20-30	40-50	-
14.	TSL-514	Airport Planning and Design	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15.	TSL-515	Road Traffic Safety	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16.	TSL-516	Transport Economics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17.	TSL-517	EV Charging Infrastructure	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

Science, Technology, and Advanced Research-tools basket

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
1.	TST-501	Data Analytics in Transportation	STAR	3	2	1	0	3	0	20-35	-	20-30	40-50	-

Item No.100.10: To consider minor modifications in the existing guidelines of Department/Centre/School Faculty Search Committee(DFSC /CFSC/SFSC).

The senate in its meeting held on 19.02.2014 and 04.03.2014, vide item No. 54.10 approved the constitution of Faculty Search Committee. The same was notified vide Notification No. Estt.(A)/502/E-5001 dated 10.04.2014 **(Appendix-A).** As per the notification, the Head of the Department will propose a Faculty Search Committee from the existing fulltime faculty members of the Department for the approval of the Director. As per the Institute letter No. IITR/Estt.(R)/2715/E-4483 dated 04-05-2017, the DFSC will have a one year term, starting on 1st January. **(Appendix-B)**

Recently, the Deans Committee in its meeting held on 02-01-2024 approved the following minor modifications in the existing guidelines of DFSC. "For DFSC, it was resolved that from now onwards, the term of newly constituted DFSC will be for two years. Preferably Convener of previous DFSC can be part of new DFSC as a member. DFSC will be proposed by DFC."

Accordingly, the revised guidelines of Faculty Search Committee is annexed at **(Appendix-C)**

The above is submitted for the consideration and approval of the Senate.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

ROORKEE-247 667

No.Estt.(A)/502/E-5001 Dated: April 10, 2014

NOTIFICATION

The Senate in its meeting held on 19.02.2014 and 04.03.2014, vide item No. 54.10 approved the constitution of Faculty Search Committee as under:

Composition of Faculty Search Committee

(a) The Head of the Department will propose a Faculty Search Committee (FSC) from the existing fulltime faculty members of the Department for the approval of the Director.

(b) There shall be four or five members in the FSC. The search committee shall be composed of individuals from diverse research and teaching backgrounds, and at various cadre levels. Preferably it should have at least one Professor, one Associate Professor and two Assistant Professors of the Department. There shall be one member from each of the other related Department(s) in the search committee.

(c) One member of the committee shall act as Convener and shall be a faculty member with leadership ability who can deal with conflicting situations.

(d) Active involvement of every member of the committee is a must. Search committee members must agree to participate in the recruitment efforts, including personal outreach to the candidates.

Responsibilities of Faculty Search Committee

The main tasks of the FSC are:

(a) Assisting in inviting applications from prospective candidates.
(b) Reducing the overall time of the recruitment process.
(c) The Committee will keep track and get in touch with prospective candidates.
(d) Processing the applications as they are received (a few applications at regular intervals).
(e) Reviewing applications with the help of other faculty members.
(f) Collecting the feedback.
(g) Making arrangements for research presentation and interview.
(h) Hosting the candidates during the research presentation and interview.
(i) Arranging a mentor/escort whenever a prospective candidate visits the Department.
(j) Maintaining confidentiality.

भेजा/SENT 10/4/14

10/4/2014
(N.K. Verma)
Assistant Registrar (Rect.)

Copy to:

1. All Heads of the Department/ Centre.
2. Professor-in-Charge, Saharanpur Campus for information please.
3. All Deans.
4. All Assistant Registrar and Deputy Registrar.
5. Assistant Registrar to the Director for Director's information please.
6. Supdt. (Meeting)

O/C
Awn
10-4-14

संस्थापन सेवाएं (भर्ती)/Establishment Services (Recruitment)
भारतीय प्रौद्योगिकी संस्थान रुड़की/Indian Institute of Technology Roorkee
रुड़की /Roorkee 247667 (उत्तराखण्ड /Uttarakhand)
Tel : 01332- 284563

संख्याःभा0प्रौ0सं0/ (आर)/ /ई–4483
No.IITR/Estt. (R)/2715 /E-4483

दिनाँकः मई 2017
Dated: 4 May 2017

All Heads of the Department/Centre
IIT Roorkee

Enclosed please find herewith a copy of the procedure for Selection of Faculty through Rolling advertisement for the position of Assistant Professor which were finalized in the meeting of the all Heads of the Department/Centre held on 06.04.2017 in the Committee Room of the James Thomason Building, for immediate implementation.

Encl: As above.

4/5/2017
सहायक कुलसचिव (भर्ती)
Assistant Registrar
(Recruitment)

प्रतिलिपि प्रेषित/Copy to: Dean of Faculty Affairs for kind information please.

APPENDIX-A

Procedure for Selection of Faculty through Rolling Advertisement

(i) A rolling advertisement for the position of Assistant Professor, with the provision of online application, will be permanently displayed on the Institute website. Candidates who are about to complete their Ph.D. will also be eligible to apply.

(ii) DFSC's are expected to vigorously scout for good candidates and encourage them to apply. The DFSC's will have a one year term, starting on 1st Jan.

(iii) After an application is received, the DFSC,in consultation with the Head, will take a call on whether the candidate should be invited for a seminar or not. The research areas of interest to the department will be decided by the faculty of the department (DFC).

(iv) Applications of candidates invited for seminar will be shared by the Head with all the faculty members of the department. Simultaneously, the Head will invite the candidate for a presentation in the department and will approach the referees for the reference letters.

(v) The DFSC will coordinate the travel, local hospitality of the candidate and also arrange his/her seminar and meetings with the Head and all faculty members in his/her area of specialization and related areas. If the candidate is abroad, the presentation can be done through Skype/VC. Announcement of the seminar by the candidate will be mailed on the IITR faculty list as well as Channel I. This announcement will also include an abstract of the talk as well as a brief resume of the candidate. A separate mail on the mailing list of the department will inform the faculty of the department that this seminar is by a faculty candidate. The presentation will be open to all members of the IITR community, including students.

(vi) All faculty members of the department will be invited by the Head to give their feedback or inputs, if any, on the basis of the candidate's application, reference letters, seminar and personal interactions. These inputs and feedback will be considered by the Professors' Committee (PC) before arriving at any decision.

(vii) PCwill discuss the merits of the applicant threadbare, and then decide whether to take the application forward.

(viii) Every department will have a Department Faculty Assessment Committee (DFAC). DFAC will consist of the Head and four members of the PC. These four members of the PC will have a term of one year (starting on 1st Jan) and will be selected from within the PC. If the Head desires, he/she may co-opt one or two more members of the PC in DFAC, on a case to case basis. The four members of the PC for DFAC will be selected as follows:

At the end of every year, all names in the PC will be arranged in an order with the name which has been out of the DFAC for the longest time at the top. The top four names are selected. The time a faculty has been out of DFAC will be

calculated from the date since he/she was last time in the DFAC. If he/she has never been in the DFAC earlier, the time will be calculated from the date he/she became a member of the PC. The first DFAC will come into existence with immediate effect and will consist of the Head (Chair) and the four senior most Professors.

(ix) The Institute will have an Institute Faculty assessment committee (IFAC). IFAC will consist of the Director, Deputy Director, DoFA and DSRIC.

(x) If the decision of the PC is to take the application forward, the Head will immediately get in touch with the Dean of Faculty Affairs to request for a joint meeting of the DFAC and IFAC.

(xi) At this joint meeting, the candidate's application, along with a summary of all the rolling applications received since the last joint meeting of DFAC-IFAC will be presented by the Head. If the joint meeting of DFAC-IFAC decides to call a candidate for interview, a selection committee will be convened as soon as possible. Even if a single promising candidate is identified, the whole process will be carried out as soon as possible.

(xii) Interviews will be held with a properly constituted selection committee. Just like the candidates, experts will also be allowed to be present through Skype/VC.

Department/Centre/School Faculty Search Committee (DFSC/CFSC /SFSC):

1. Composition of Faculty Search Committee:

(a) The Department/Centre/School Faculty Committee (DFC/CFC/SFC) will propose a Faculty Search Committee(FSC) from the existing full time faculty members of the Department for the approval of the Director.

(b) There shall be four or five members in the FSC. The search committee shall be composed of individuals from diverse research and teaching backgrounds, and at various cadre levels. Preferably it should have at least one Professor, one Associate Professor and two Assistant Professors of the Department. There shall be one member from each of the other related Department(s) in the search committee.

(c) One member of the committee shall act as Convener and shall be a faculty member with leadership ability who can deal with conflicting situations.

(d) The Convener of previous FSC can be part of new FSC as a member.

(e) Active involvement of every member of the committee is a must. Search committee members must agree to participate in the recruitment effort, including personal outreach to the candidates.

(f) The term of the committee will be for two years, starting on 1st January.

2. Responsibilities of Faculty Search Committee:

The main tasks of the FSC are:

(a) Assisting in inviting and actively soliciting good applications from prospective candidates.
(b) Reducing the overall time of the recruitment process.
(c) The Committee will keep track and get in touch with prospective candidates.
(d) Processing the applications as they are received (a few applications at regular intervals).

(e) Reviewing applications with the help of other faculty members, especially from areas relevant to the candidate.
(f) Collecting the feedback.
(g) Making arrangements for research presentation and interview.
(h) Hosting the candidates during the research presentation and interview.
(i) Arranging a mentor/ escort whenever a prospective candidate visits the Department.
(j) Maintaining confidentiality.

Earlier Notification No. Estt.(A)/502/E-5001 dated 10.04.2014 on constitution of Faculty Search Committee will superseded by these guidelines.

Item No.100.11: To report the following approval accorded by the Chairman, Senate on behalf of the Senate.

A. Recommendations of IAPC:

(i) Approval on the requests of the following students (Item No. 137.2.1):

a. Mr. Shubham Kumar (Enr. No. 18122021), B.Tech. EPH, IV Yr – Name restoration approved.
b. Mr. Animesh Sharma (Enr. No. 20113024), B.Tech. (CE), IV Yr – Self-study of course 'CEC-101' approved.
c. Mr. Rishav Kumar (Enr. No. 20113127), B.Tech. (CE), IV Yr – Self-study of course 'CEC-101' approved.
d. Mr. Shubham Saurav (Enr. No. 23563016) M.Tech. Dam Safety and Rehabilitation – Rejoining of programme allowed.
e. Mr. Nirmal Kumar Deo (Enr. No. 22541006), M.Tech. (ME) II Yr – Name restoration not approved.

B. Recommendations of IRC

(i) Approval on the requests of the following students (Item No. 68.2.1 to 68.2.3):

a. Reinstatement of academic registration-

1. Mr. Bhanu Sharma, (En. No. 18917009), ex-Ph.D. student, Deptt. of Hydrology.
2. Mr. Mohammad, (En. No. 20906006), ex-Ph.D. student, Centre for Nanotechnology.
3. Mr. Ashutosh Kumar Jha, (En. No. 17910034), ex-Ph.D. student, Deptt. of Civil Engineering.
4. Mr. Rakesh Kumar Sharma (En. No. 23911015), ex- Ph.D. student, Deptt. of Computer Science & Engineering.
5. Mr. Sanjeev Saharan (En. No. 23911013), ex-Ph.D. student, Deptt. of Computer Science & Engineering.
6. Mr. Keshav Chaturvedi (En. No. 23919013), ex-Ph.D. student, Deptt. of Mathematics.

b. Approving request for time extension of Ms. Minakshi Koundal (En. No. 16923010), Deptt. of Applied Science and Engineering.)

c. Approving request for registration for the Spring Semester 2023-24 of Ms. Osheen (En. No. 18926005), Deptt. of Water Resources Development and Engineering.

C. Academic Calendar for Autumn Semester 2024-25 based on the recommendations of the Academic Calendar Committee.

D. Institution of new awards/prizes/scholarships.

1. **Horiba Talent Hunt Scholarship:** HORIBA India Pvt. Ltd., New Delhi has created a corpus to support twenty (20) partial tuition fee waiver of Rs. 66,000/- each to financially constrained undergraduate students under corporate social responsibility. This is a one-time financial support and to be utilized in the financial year 2023-24.

Eligibility: All General and OBC category students of B. Tech., B.Arch. and Integrated/Dual degree programmes taking 2/3 Tuition Fee Waiver, but not availing Merit Cum Means (MCM) scholarship.

Selection Process: The selection process will be based on inviting applications from the students at the individual level. The list of eligible students will be sorted in ascending order of their family income and the top 20 applicants will be selected for the award of scholarship.

2. **Shreyas Kumar Class of 1998 Gold Medal:** Mr. Shreyas Kumar, a representative of alumni of 1998 batch of B.E. and 1999 batch of B.Arch., has established a corpus to create one (01) Gold medal per year for 10 years to the graduating student of B.Tech. and B.Arch. programmes for the best all-round performance.

Eligibility: All graduating students of B.Tech. and B.Arch. programmes admitted through JEE (Advanced) having a minimum CGPA of 9.0 till the pre-final semester and with significant contributions/ achievements in some of the following activities during their stay at IIT Roorkee:

a. Contribution in various students' bodies/councils such as Hostel Affairs, Technical Affairs, Sports Affairs, Cultural Affairs, Entrepreneurship Affairs, etc.

b. Sports (for any games),
c. Social-services (any field and any location),
d. Entrepreneurship (any field),
e. Cultural (any field).

Selection Process: The selection process will be based on inviting the applications from the eligible students at individual level. The applicants will also be asked to submit a brief description on their contributions/achievements in the above-mentioned activities during their stay at IIT Roorkee along with supporting documents. These applications will be screened by a committee (comprising faculty members along with a representative of donor), proposed by Chairperson, SCSP and approved by Chairman, Senate. For screening, the committee will evaluate each application on a total of 50 points, 10 points for each category. Under all categories, the committee will award a 0/5/10 score depending on their contribution. The shortlisted candidates will be asked to make a presentation in front of the committee constituted. The final recommendation of the committee will be sent to the Senate for the approval. The student getting Director Gold medal will not receive this award.

3. **Class of '98 Tejwani Gold Medal:** Mr. Harish Tejwani, CEO, Wizni, Inc., and an alumnus of 1998 batch of B.E. (Electronics and Communication Engineering), has established a corpus to create two (02) Gold medals per year for 10 years, one each to the graduating students of B. Tech. (Computer Science and Engineering) and B. Tech. (Electronics and Communication Engineering), for the best B.Tech. project. The awardees will also receive a confirmed placement offer at ARIVE India by Wizani Software Pvt. Ltd. along with a joining bonus of Rs. 1,00,000/-. The recommendation for this award will be received from the concerned departments.

Eligibility: All graduating students of B. Tech. (Computer Science and Engineering) and B. Tech. (Electronics and Communication Engineering) having a minimum CGPA of 9.0 till the pre-final semester and with innovative, potential, deep-technical, and impactful B.Tech. project.

Selection Process: The selection process will be based on inviting the applications from the eligible students at individual level. The applicants will also be asked to submit a brief description on their B.Tech. project highlighting the innovative, potential, deep-technical, and impactful components. These applications will be screened by a departmental committee (comprising faculty members along with a representative of donor). The shortlisted candidates will be asked to make a presentation in front of the committee constituted. The final recommendation of the committee will be sent to the SCSP.

4. **Shri Azad Mohan Agarwal Gold Medal:** Mr. Rajeev Mohan Agarwal, an alumnus of 1998 batch of B.Tech., has established a corpus to create one (01) Gold medal per year for 10 years to the girl student with the highest CGPA amongst the graduating girl students of B.Tech. (Electronics and Communication Engineering).

5. **Kunal Kaushal Award for All-round Excellence:** Mr. Kunal Kaushal, an alumnus of 2003 batch of B.Tech., has established a corpus to create two (02) awards of Rs. 20,000/- each per year to the graduating students (one male and one female) of B.Tech. (Civil Engineering) for the overall excellence in the field of cultural activity, entrepreneurship and leadership. The minimum CGPA requirement is 7.5. The recommendation for this award will be received from the concerned department.

6. **Satya Sharma MCM Scholarship:** Mr. Satya P. Sharma, an alumnus of 1962 batch of B.E. (Mechanical Engineering), has established a corpus to create two (02) MCM scholarships of Rs. 25,000/- each per year to the financially constrained UG student from the Department of Computer Science and Engineering or Department of Mechanical and Industrial Engineering. The minimum CGPA requirement is 8.0 and at least one awardee should be a female student. The awardees will be selected as per the prevailing procedure adopted by SCSP to award MCM scholarships of the Institute.

The above are reported to the Senate.

Any other item

Item No.100.12: To consider the 2nd mercy appeal of Mr. Anmol Raj (Enr. No. 21113019), B.Tech. (CE), III Yr regarding name restoration and continuation of program.

Mr. Anmol Raj (Enr. No. 21113019), is a III year student of B. Tech. Civil Engineering. He had earned 54 credits out of 56 credits at the end of II year. Accordingly, his name was struck off vide O.M. No. Acad./4848/NSO-14n (2022-23) dated August 10, 2023. **(Appendix-A).** As per the existing Regulation, the enrolment of a student in a programme shall stand terminated if he/she fails to earn 14n credits in a semester, where, n is the number of semesters registered. **(Appendix-B)**

In this context the following are stated**:**

(i) First appeal was received on Aug 14, 2023 for continuation of programme as the name of Mr. Anmol Raj was struck off under 14n credit rule.
(ii) IAPC in its 132nd meeting dated 23.08.2023 did not recommend the request.
(iii) Senate in its 98th meeting held on Oct. 11, 2023 did not accept the request of the student.
(iv) Student was informed about the decision of Senate vide mail dated Nov. 10, 2023.
(v) 2nd appeal was received on Jan. 16, 2024 from the student citing medical reasons during 4th semester (January & April) along with the proceedings of the Medical board **(Appendix-C).** The 2nd appeal of the student was forwarded by the HoD and Chairman, DAPC.
(vi) The 2nd mercy appeal committee in its meeting held on 06.02.2024 observed that there is *no merit* in his request for further discussion.
(vii) The medical documents for the period January, 2023 to April, 2023 submitted by the student were verified by the CMO.

(viii) **Academic details:**

Semester	**1st**	**2nd**	**3rd**	**4th**
SGPA	6.333	3.667	0.762	2.920
CGPA	6.333	4.911	3.591	3.407

(ix) Total earned credits: 54, Minimum credits required under 14n rule: 56

(x) Remaining credits to complete degree: 111

Guidelines for the EXIT policy are placed at **Appendix-D.**

The above is submitted for the consideration and approval of the Senate.

ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

No. Acad./4848/NSO-14n (2022-23) Dated: August 16, 2023

OFFICE MEMORANDUM

In compliance to revised clause **(Notification No Acd./994/UG-15 dated November 13th, 2019)** On 'Termination of Enrollment No. on Academic Grounds' of UG programmes Regulations, it is noted that following students have earned less credits than 14n during the Spring Semester 2022-23. Therefore, they are not eligible to continue their studies at this Institute.

S. No.	En. No.	Name	Branch	SGPA	CGPA	TECr in spring sem	No of Sem. Registered, n	Total earned credits/ Required credits
1	21115047	Deeptanshu Rai	EE	0	2.73	0	4	25/56
2	21113019	Anmol Raj	CE	2.92	3.40	13	4	54/56
3	20117024	Ankit Gupta	ME	2.88	3.40	11	6	76/84

Any observation / discrepancy on the above may be brought to the notice of the Academic Affairs Office at the earliest & latest by **August 16, 2023**.

Deputy Registrar (AAO)

Copy forwarded for information and necessary action to:

1. Head/Chairperson, DAPC of concerned Department.
2. Dean of Students' Welfare.
3. Dean, Finance & Planning.
4. Dean of Academic Affairs.
5. ADoAA (Curriculum/Evaluation).
6. ADoSW (Bhawans & Mess)
7. Chairman, CCB
8. FO/AR (F&A)
9. Concerned student.
10. Student's Parents through registered post.
11. Personal file.

Note: Students facing difficult personal circumstances and having adequate promise to complete their academic programme can appeal Through Head of Department/Centre along with the recommendation of Chaiman, DAPC/CAPC at the earliest and latest by **16 Aug,2023.**

Appendix 'B'
Item No. Senate / 100.12

ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

No. Acd./ 994 /UG-15 Dated: November 13 , 2019

NOTIFICATION

Subject: Revised UG Regulation on Termination of Enrolment- On Academic Grounds (Item No. 80.3)

The Senate in its 80th meeting held on 26.09.2019 considered and approved the revised criteria and process for termination of Enrolment- On Academic Grounds. The approved criteria and process for termination of Enrolment - On Academic Grounds as under:

The enrolment of a student in a programme shall stand terminated if he/she **fails to earn 14*n* credits in a semester**, where, *n* is the number of semesters registered. It is to be applicable on the students from **3rd semester onwards**.

The termination is subject to criteria as mentioned in table below:

Criteria	Action
First Time TECR in the current semester < 14*n*	Warning notice to the concerned student with a copy to parents & HoD
Second time in immediate subsequent semester	
(i) If TEC > 14*n*	Student's program continues and no warning is issued
(ii) If TEC ≤ 14*n* and credits earned in that semester ≥ 14	Student's program is continued but warning is issued
(iii) If TEC ≤ 14*n* and earned credits in that semester < 14	Student's program will be terminated
At any time if SGPA ≤5 irrespective of earned credits	Warning to the student with a copy to parents.

Note: This will not include any extra credits such as for Minor Specialization Courses or Departmental Honours Courses credits.

This notification supersedes the UG Regulation No. 33(B) w.e.f., the date of its issue and it is applicable on all existing students.

Assistant Registrar (Curriculum)

Copy to (through e mail):-

1. Chairman Senate & Director
2. All faculty
3. All Head of Departments/Centres
4. Dean of Academic Affairs
5. Associate Dean of Academic Affairs (Curriculum)/(Admission)/(Evaluation)
6. Joint Registrar (Academics)
7. Asstt. Registrar (Meetings)
8. Channel I/ Academic webpage of iitr.ac.in/acad portal

TO.

The DOA Academic affairs
IIT Roorkee.

Subject: Name struck off from the institute's roll.

Sir,

Most humbly and respectfully I want to say that I am Anmol Raj 21113019 (Btech civil engineering 3rd year) student at IIT Roorkee. Sir My name was struck off from the institute's roll due to less earned credits. Sir I required 56 credits and I scored 54. Sir I wasn't able to because of medical reasons I faced in my 4th Semester (January, April months).

Sir, I previously applied for mercy appeal which was rejected by the Senead. Sir at that time I hadn't my medicals with me as it was at home that time.

Sir, I have brought it and had verified the case through medical board. whose results I am attaching with the application.

Sir I therefore request you to please look at the case so that my name restoration and continuation in programme could happen. Sir this Semester has just started. and if the issue is solved soon I will be able to continue my studies from this Semester otherwise I will have to face one more Semester delay. for the consideration of the applica-ion & for processing the case faster I will be obilishe to you.

Your Sincerely.

ANMOL RAJ.

21113019.

CIVIL

Anmd Raj

Forwarded

16/11/2024

CDAPC

अध्यक्ष, डी.ए.पी.सी.
Chairman, DAPC

Forwarded

16/11/24

डा0 प्रवीण कुमार / Dr. Praveen Kumar
प्राध्यापक एवं विभागाध्यक्ष / Professor & Head
जलगद अभियांत्रिकी विभाग / Deptt. of Civil Engg.
भारतीय प्रौद्योगिकी संस्थान रुड़की
Indian Institute of Technology Roorkee
रुड़की-२४७ ६६७ / Roorkee-247 667

HOLOGRAM

TRANSCRIPT VALID ONLY IF IT BEARS INSTITUTE HOLOGRAM

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

OFFICIAL TRANSCRIPT

(Statement of Earned Credits & Grades)

ENROLLMENT NO. OF THE STUDENT: 21113019 **NAME:** ANMOL RAJ

PROGRAMME: BACHELOR OF TECHNOLOGY (CIVIL)

SESSION 2021-22	**SEMESTER** Autumn	**GRADE**	**GRADE**	
SUBJECT CODE	**SUBJECT TITLE**	**LETTER**	**POINT**	**CREDIT**
CEN-101	INTRODUCTION TO CIVIL ENGINEERING	A		2
CEN-103	NUMERICAL METHODS AND COMPUTER PROGRAMMING	D		4
CEN-105	INTRODUCTION TO ENVIRONMENTAL STUDIES	B		3
HSN-001	COMMUNICATION SKILLS	A		2
HSN-002	INTRODUCTION TO PSYCHOLOGY	C+		2
MAN-001	MATHEMATICS-I	C+		4
PHN-001	MECHANICS	C+		4

EARNED CREDITS 21 **TOTAL EARNED CREDITS** 21 **SGPA** 6.333
REG. CREDITS 21 **CGPA** 6.333

SESSION 2021-22	**SEMESTER** Spring	**GRADE**	**GRADE**	
SUBJECT CODE	**SUBJECT TITLE**	**LETTER**	**POINT**	**CREDIT**
CEN-102	SOLID MECHANICS	C+		4
CEN-104	ENGINEERING GRAPHICS	C		4
CEN-106	GEOMATICS ENGINEERING – I	F		4
CEN-108-I	FLUID MECHANICS	C+		4
CYN-008	GENERAL CHEMISTRY-III	C		4
MAN-006	PROBABILITY AND STATISTICS	F		4

EARNED CREDITS 16 **TOTAL EARNED CREDITS** 37 **SGPA** 3.667
REG. CREDITS 24 **CGPA** 4.911

SESSION 2022-23	**SEMESTER** Autumn	**GRADE**	**GRADE**	
SUBJECT CODE	**SUBJECT TITLE**	**LETTER**	**POINT**	**CREDIT**
CEN-203	GEOMATICS ENGINEERING-II	FS		5
CEN-205	CHANNEL HYDRAULICS	F		4
CEN-207	STRUCTURAL ANALYSIS-I	D		4
CEN-209	WATER SUPPLY ENGINEERING	F		4
EEN-112	ELECTRICAL SCIENCE	F		4

EARNED CREDITS 4 **TOTAL EARNED CREDITS** 41 **SGPA** 0.762
REG. CREDITS 21 **CGPA** 3.591

SESSION 2022-23	**SEMESTER** Spring	**GRADE**	**GRADE**	
SUBJECT CODE	**SUBJECT TITLE**	**LETTER**	**POINT**	**CREDIT**
CEN-202	WASTE WATER ENGINEERING	FS		4
CEN-204	ENGINEERING HYDROLOGY	C		4
CEN-206	STRUCTURAL ANALYSIS-II	F		4
CEN-208	DESIGN OF REINFORCED CONCRETE ELEMENTS	F		4
CEN-210	HIGHWAY ENGINEERING	C		5
MIN-102	BASIC MANUFACTURING PROCESSES	B		4

EARNED CREDITS 13 **TOTAL EARNED CREDITS** 54 **SGPA** 2.920
REG. CREDITS 25 **CGPA** 3.407

Total Required - 165
- 54
Remaining 111

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

OFFICIAL TRANSCRIPT

(Statement of Earned Credits & Grades)

ENROLLMENT NO. OF THE STUDENT: 21113019 **NAME:** ANMOL RAJ

PROGRAMME: BACHELOR OF TECHNOLOGY (CIVIL)

STUDENT HAS NOT YET COMPLETED THE PROGRAMME

Note:-

1) The medium of instruction at this Institute is English.

2) Academic Performance is graded on a 10-Point Scale.

3) "S"-Grade: Satisfactory performance during Covid-19 pandemic.

Place: Roorkee **Assistant Registrar (Evaluation)**

Dated: 7/12/2023

Appendix 'D'
Item No. Senate / 100.12

ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
Roorkee – 247667

No. Acd./1419/Senate-90 Dated: May 09, 2022

Subject: EXIT Policy for the academic programs (Item No. 90.4)

The Senate in its 90th meeting held on 16.03.2022 considered the report of the committee constituted to create a proposal for a comprehensive "Exit Policy" of the academic programs and decided that:

1. For UG programs, a certificate can be issued to a student provided she/he has spent at least two years in the program and has earned a minimum of 48 credits.

2. For PG programs, a certificate can be issued to a student provided she/he has spent at least one year in the program and has earned a minimum of 28 credits.

3. The Exit option in a Ph.D. program will be available to a student only after she/he completes a minimum period of one of year in the program after candidacy. Such a candidate shall be eligible for an MS by Research degree, provided she/he successfully defends her/his MS-Thesis in a presentation before the SRC. If a candidate is unsuccessful in the viva-voce, yet wishes to leave the programme, she/he may be awarded a Certificate on the recommendation of the SRC.

Assistant Registrar (Curriculum)

Copy to (through e-mail):-

1. Chairman Senate & Director
2. All Members of EXIT Policy committee
3. Head of all Departments/ Centres / School
4. Dean, Academic Affairs
5. ADoAA (IT Systems & Admission)/ (Curriculum)/ (Evaluation)
6. Assistant Registrar (Evaluation)
7. Meeting Section

शैक्षणिक अफेयर्स कार्यालय
ACADEMIC AFFAIRS OFFICE
भारतीय प्रौद्योगिकी संस्थान रूड़की
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

No. Acd./Evl./4491/Senate Dated: December 23, 2022

OFFICE MEMORANDUM

The Senate, in its 92nd meeting held on November 10, 2022 vide item no. 92.10, considered and approved the formats of the Exit Certificates of UG/PG/Ph.D. as attached. **(Annexure-A)**

Further, the Exit Policy will be implemented in the Institute w.e.f. May 09, 2022.

23/12/22
Assistant Registrar
(Evaluation)

Copy through e-mail to:-

23/12/2022

1. The Director, IIT Roorkee.
2. All Faculty members, IITR.
3. Dean of Academic Affairs.
4. Associate Dean of Academic Affairs (Evaluation/ Curriculum/ ITS&A).
5. All students, IITR.

Serial No.: _ _ _ _

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

CERTIFICATE

This is to certify that

Name of Student

Enrollment No.: _ _ _ _ _ _ _ _,

registered in Programme Name in the Department/ Centre/ School of / for _____,

has earned _____ credits with the CGPA _____ during DD-MM-YYYY to DD-MM-YYYY.

The minimum number of credits required for completion of the degree is _____.

14 DEC 2022

This Certificate is issued on specific request of the student as per the Exit Regulations of the Institute.

Issued on: DD-MM-YYYY

DEAN OF ACADEMIC AFFAIRS

Appendix 'A'

Serial No.: _ _ _ _

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

CERTIFICATE

This is to certify that

Name of Student

Enrollment No.: _ _ _ _ _ _ _ _,

registered in Ph.D. Programme in the Department/ Centre/ School of/ for _____,

during DD-MM-YYYY to DD-MM-YYYY. The student has completed candidacy on DD-MM-YYYY

and has earned _____ credits.

14 DEC 2022

This Certificate is issued on specific request of the student as per the Exit Regulations of the Institute.

Issued on: DD-MM-YYYY

DEAN OF ACADEMIC AFFAIRS