NATIONAL INSTITUTE OF TECHNOLOGY KURUKSHETRA

No. Acad./2025/   Dated: 3.7.2025

NOTIFICATION

Subject: Application for Minor Degree Courses (2025–2027) for B.Tech. students

Applications are invited from B.Tech. 3rd year students (entering 5th semester) for enrollment in Minor Degree Programs offered by various departments (list enclosed as Annexure-B).

Students must submit their applications by filling in the choices for different specializations by **20th July 2025 (up to 5:00 PM)**.

Application Link through Google Form: **https://forms.gle/7hwWqB4FPfzy2j626**

Before filling the application form, students are advised to carefully read the guidelines and instructions provided in Annexure-A.

For further details regarding the fee structure, course load, and eligibility, kindly refer to the attached annexures.

This is for information and further necessary action of all concerned.

Sd/-
Faculty I/C (Academic)

Encls: Annexure-A & Annexure-B

Copy to:
1. AR to Director for kind information of the Director
2. Prof. I/C (CCN) with a request to get it to be uploaded on Institute website.
3. All HoDs for circulation among students
4. Chief Warden (Boys & Girls) for circulation among students
5. Dean (Acad.)

IMPORTANT INSTRUCTIONS:

1. **Last Date to Apply:** 20th July 2025 (by 5:00 PM)

2. **Allotment of Seats:** Seats will be allotted based on the choices filled by students. Each student can opt for only one minor degree specialization offered by departments other than their parent department.

3. **Fee Structure:** Fee is ₹4000/- per credit payable every semester from 5th to 8th semester. For example, a 4-credit course will cost ₹16,000 per semester.

4. **Eligibility for Specific Programs:** The Minor Degree in Electrical Engineering (Unmanned Aerial Systems and Applications) is open to students from all departments, including those from the Electrical Engineering Department.

5. **Mode of Classes:** Minor degree classes will be conducted on weekends (Saturday & Sunday).

6. **Program Duration:** The same minor degree specialization will be followed from 5th to 8th semester once allotted.

7. **Credit Requirement for Award of Minor Degree:** Students must complete 12 to 16 credits of minor degree courses by the end of 8th semester to be awarded the Minor Degree.

Annexure - B

Minor degree in Civil Engineering (Geotechnical Engineering)

S. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of seats
1	CEPC208	Soil Mechanics	3 - -	3	V	All branches	10-20
2	CEPC212	Soil Mechanics (P)	- - 2	1	V	All branches	
3	CEPC301	Geotechnical Engineering - I	3 - -	3	VI	All branches	
4	CEPC305/ CEPE201	Geotechnology (P)/ Computational Practical	- - 2	1	VI	All branches	
5	CEPE311/ CEPE325/ CEPE323	Ground Improvement Engineering/ Soil Dynamics/ Application of Artificial Intelligence in Civil Engineering	3 - -	3	VII	All branches	
6	CEPE302	Geotechnical Engineering (Seminar)	- - 1	1	VIII	All branches	
7	CEPE408	Geotechnical Engineering (Project)	- - 3	3	VIII	All branches	

Minor degree in Civil Engineering (Geoinformatics)

S. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of seats
1	CEPC204	Surveying - I	3 - -	3	V	EE/EC/CO/AI-ML	10-20
2	CEPC207	Surveying - I (P)	- - 2	1	V	EE/EC/CO/AI-ML	
3	CEPC210	Surveying - II	3 - -	3	VI	EE/EC/CO/AI-ML	
4	CEPC501	Fundamental of Remote Sensing	3 - -	3	VII	EE/EC/CO/AI-ML	
5	CEPE501/CEPE502	Cartography and Basic of GIS/Digital Image Processing	3 - -	3	VII	EE/EC/CO/AI-ML	
6	CEPE306	Geoinformatics (Seminar)	- - 1	1	VIII	EE/EC/CO/AI-ML	
7	CEPE406	Geoinformatics (Project)	- - 2	2	VIII	EE/EC/CO/AI-ML	

Minor Degree in Civil Engineering (Environmental Engineering)

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	CEPC302	Water Supply & Treatment	3-0-0	3	V	All branches	10-20
2	CEPC306	Environmental Engineering – I (P)	0-0-2	1	V	All branches	
3	CEPE304	Environmental Engineering (Seminar)	0-1-0	1	V	All branches	
4	CEPC308	Sewerage & Sewage Treatment	3-0-0	3	VI	All branches	
5	CEPC312 OR CEPE201	Environmental Engineering – II (P) OR Computational Practical	0-0-2 0-0-2	1 1	VI VI	All branches	
6	CEPE314 OR CEOE309 OR CEPC402	Pollution Control and Waste Management OR Ecology and Biodiversity OR Industrial Waste Water Treatment	3-0-0 3-0-0 2-0-0	3 3 2	VII VII VII	All branches	
7	CEPE410	Environmental Engineering (Project)	0-0-6	3	VIII	All branches	

Minor degree in Civil Engineering (Transportation Engineering)

S. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of seats
1	CEPC307	Transportation Engineering - I	3 - -	3	V	All branches	10-20
2	CEPC311	Transportation Engineering - I (P)	- - 2	1	V	All branches	
3	CEPC401	Transportation Engineering - II	3 - -	3	VI	All branches	
4	CEPC404/ CEPE201	Transportation Engineering - II (P)/ Computational Practical	- - 2	1	VI	All branches	
5	CEPC406/ CEPE312/ CEOE311	Railway & Airport Engineering / Traffic Engineering and Road Safety/ Transportation Economics and Finance	3 - -	3	VII	All branches	
6	CEPE305	Transportation Engineering (Seminar)	- - 1	1	VIII	All branches	
7	CEPE411	Transportation Engineering (Project)	- - 3	3	VIII	All branches	

Minor degree in Civil Engineering (Water Resources Engineering)

S. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of seats
1	CEPC201	Fluid Mechanics - I	3 - -	3	V	All branches	10-20
2	CEPC206	Fluid Mechanics - I (P)	- - 2	1	V	All branches	
3	CEPC303	Engineering Hydrology	3 - -	3	VI	All branches	
4	CEPE201	Computational Practical	- - 2	1	VI	All branches	
5	CEPE323	Application of Artificial Intelligence in Civil Engineering	3 - -	3	VII	All branches	
6	CEPE409	Water Resources Engineering (Project)	- - 3	3	VIII	All branches	

Minor degree in Civil Engineering (Structural Engineering)

S. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of seats
1	CEPC101/ CEPC202	Engineering Mechanics/ Building Construction and Materials	3 - 2 3 - -	4 3	V	All branches	10-20
2	CEPC203	Structural Analysis - I	3 - -	3	VI	All branches	
3	CEPC405	Construction Management, Estimating and Costing	3 - -	3	VI	All branches	
4	CEPE320/ CEPE323/ CEOE305	Construction Techniques and Equipments/ Application of Artificial Intelligence in Civil Engineering/ Building Planning and Drawing	3 - -	3	VII	All branches	
5	CEOE310/ CEOE404/ CEOE411	Sustainable Infrastructure/ Theory of Elasticity and Plasticity/ Advanced Concrete Technology	3 - -	3	VIII	All branches	

No./CO/2024   **Dated: 27.08.2024**

Ref. No.: **Email received from Dean (Academic) on dated: 19.08.2024**

Subject: **Minor Degree**

Name of the Minor Degree: **"Computing and Intelligence"**

Sr. No.	Course Type	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	Program Core	CIPC-201	Data Structures	3-0-2	4	V	All branches excluding CS, IT, AIML, AIDS and M&C	60
2		CIPC-300	Design and Analysis of Algorithms	3-0-2	4	VI		60
3		CIPC-301	Operating Systems	3-0-2	4	VII		60
4	Program Elective	CIPC-402	Advanced Machine Learning	3-0-2	4	VIII		60
5		CIPC-404	Artificial Intelligence	3-0-2	4			60

Head of Department
(Signature & Seal)

To
Dean Academic

Name of Department: **Electrical Engineering**

Name of the Minor Degree: Minor Degree in_____ **Unmanned Aerial Systems and Applications**

Students who have registered for B.Tech. (Minor) in Electrical Engineering will study 4 integrated courses of 16 credit courses below.

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	EEMD35E	Aerodynamics and Simulation of UAV	3-0-0	3	V	All Branches	50
2	EEMD36E	Artificial Intelligence and Computer vision	3-0-0	3	VI	All Branches	50
	EEMD37E	Hardware and Simulation Lab	0-0-2	1			
3	EEMD47E	IOT for UAV	3-0-0	3	VII	All Branches	50
	EEMD48E	IOT and AI for UAV Lab	0-0-2	1			
4	EEMD49E	Guidance and Control	3-0-0	3	VIII	All Branches	50
	EEMD50E	Application based Design Project	0-0-4	2			

Name of Department: **Electrical Engineering**

Name of the Minor Degree: Minor Degree in_____ **Computational and Artificial Intelligence**

Students who have registered for B.Tech. (Minor) in Electrical Engineering will study 4 integrated courses of 16 credit courses below.
* Compulsory Courses

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	EEMI301*	Fundamentals of Electrical Engineering (Circuits, measurements and control systems)	3-0-2	4	V	All Branches	50
2	EEMI302*	Basics of Energy systems (Power systems, machines and power electronics)	3-0-2	4	VI	All Branches	50
3	EEMI404A OR EEMI404B	Artificial Intelligence Metaheuristic Optimization Techniques	3-0-2	4	VII	All Branches	50
4	EEMI408A OR EEMI408B	Big Data Analytics Modelling and Simulation	3-0-2	4	VIII	All Branches	50

Name of Department: **Electrical Engineering**

Name of the Minor Degree: Minor Degree in_____ **Power Converter and Drives**

Students who have registered for B.Tech. (Minor) in Electrical Engineering will study 4 integrated courses of 16 credit courses below.

* Compulsory Courses

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	EEMI301*	Fundamentals of Electrical Engineering (Circuits, measurements and control systems)	3-0-2	4	V	All Branches except EE & SET	50
2	EEMI302*	Basics of Energy systems (Power systems, machines and power electronics)	3-0-2	4	VI	All Branches except EE & SET	50
3	EEMI403A OR EEMI403B	Power Quality Flexible AC Transmission Systems	3-0-2	4	VII	All Branches except EE & SET	50
4	EEMI407A OR EEMI407B	Electric Vehicles Power Converters for Renewable Energy	3-0-2	4	VIII	All Branches exce	50

Name of Department: **Electrical Engineering**

Name of the Minor Degree: Minor Degree in_____ **System Automation & Control**

Students who have registered for B.Tech. (Minor) in Electrical Engineering will study 4 integrated courses of 16 credit courses below.
* Compulsory Courses

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	EEMI301*	Fundamentals of Electrical Engineering (Circuits, measurements and control systems)	3-0-2	4	V	All Branches except EE & SET	50
2	EEMI302*	Basics of Energy systems (Power systems, machines and power electronics)	3-0-2	4	VI	All Branches except EE & SET	50
3	EEMI402A OR EEMI402B	Control System Analysis & Design / Industrial Control & Automation	3-0-2	4	VII	All Branches except EE & SET	50
4	EEMI406A OR EEMI406B	Robotics & Control / Autonomous Vehicles/Drone Technologies	3-0-2	4	VIII	All Branches except EE & SET	50

Name of Department: **Electrical Engineering**

Name of the Minor Degree: Minor Degree in_____ **Renewable Energy Systems & Management**

Students who have registered for B.Tech. (Minor) in Electrical Engineering will study 4 integrated courses of 16 credit courses below.

* Compulsory Courses

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	EEMI301*	Fundamentals of Electrical Engineering (Circuits, measurements and control systems)	3-0-2	4	V	All Branches except EE & SET	50
2	EEMI302*	Basics of Energy Systems (Power systems, machines and power electronics)	3-0-2	4	VI	All Branches except EE & SET	50
3	EEMI401A OR EEMI401B	Energy conservation and management / Economics of Renewable energy Systems	3-0-2	4	VII	All Branches except EE & SET	50
4	EEMI405A OR EEMI405B	Wind Energy Systems / Solar Energy Systems	3-0-2	4	VIII	All Branches except EE & SET	50

Name of Department: **ELECTRONICS AND COMMUNICATION ENGINEERING**

Name of the Minor Degree: **Minor Degree in Computer Vision**

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	ECMD 101	Introduction to Image Processing	3-0-0	3	V	All	Minimum 10
2	ECMD 102	Image Processing Applications	3-0-0	3	VI	All	Minimum 10
3	ECMD 103	Image Forensic	3-0-0	3	VII	All	Minimum 10
4	ECMD 104	Computer Vision	3-0-0	3	VIII	All	Minimum 10

Name of the Minor Degree: **Minor Degree in IoT**

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	ECMD 201	Introduction to IoT and its Applications	3-0-0	3	V	All	Minimum 10
2	ECMD 202	IOT Security and Privacy	3-0-0	3	VI	All	Minimum 10
3	ECMD 203	Wireless Sensor Networks	3-0-0	3	VII	All	Minimum 10
4	ECMD 204	Wireless Communication Technologies for IoT	3-0-0	3	VIII	All	Minimum 10

Name of the Minor Degree: **Minor Degree in VLSI Design**

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	ECMD 301	Digital Design	3-0-0	3	V	All	Minimum 10
2	ECMD 302	Verilog HDL	3-0-0	3	VI	All	Minimum 10
3	ECMD 303	Digital IC Design	3-0-0	3	VII	All	Minimum 10
4	ECMD 304	Embedded System Fundamentals	3-0-0	3	VIII	All	Minimum 10

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Name of Department: MECHANICAL ENGG. DEPARTMENT

Name of the Minor Degree: Minor Degree in__Industrial Management

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	MEPC212	Industrial Engg	3-0-0	3	V	all branches except ME & PIE	10 Minimum 40 Maximum
2	MEPE420	Quality Control & Assurance	3-0-0	3	VI	all branches except ME & PIE	10 Minimum 40 Maximum
3	MEPE318 / MEPE407/ MEPC319	Operations Research / Production Planning & Control / Reliabitility & Maintenance Engg.	3-0-0	3	VII	all branches except ME & PIE	10 Minimum 40 Maximum
4	MEPE317 / MEPE406/ MEPE419	Logistics & Supply Chain management/ Engineering Economy/ Six Sigma: Concepts & Methodology	3-0-0	3	VIII	all branches except ME & PIE	10 Minimum 40 Maximum
5*	MEPE421 / MEPE306/ MEPE408	Facilities Design/ Work Study & Ergonomics./ Project I	3-0-0	3	VIII	all branches except ME & PIE	10 Minimum 40 Maximum

*The Students will qualify for minor degree by earning atleast 12 Credits during 5th to 8th Semester. However, the students can also opt for the 5th subject and earn 15 Credits by choosing any of the subjects mentioned as * in the 8th semester.*

28.8.2024

Head of Department
(Signature & Seal)

Head,
Mechanical Engg. Deptt.
National Institute of Technology
KURUKSHETRA-136119.

To
Dean Academic

DEPARTMENT OF CHEMISTRY
NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA
KURUKSHETRA 136 119

No.CH/24/   **Dated: 27/08/2024**

Name of the Department: Chemistry

Name of the Minor Degree: Bio-Chemical Engineering

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1.	CHMC311	Fundamentals of Nano Biochemical Technology	3-0-0	3	V	All Branches	40
2.	CHMC312	Bio-Chemical Separation Technology	3-0-0	3	VI	All Branches	40
3.	CHMC411	Industrial Biotechnology	3-0-0	3	VII	All Branches	40
4.	CHMC412	Biochemical Waste Treatment	3-0-0	3	VIII	All Branches	40

(Minati Baral)
HOD

To
Dean (Academic)

DEPARTMENT OF CHEMISTRY
NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA
KURUKSHETRA 136 119

No.CH/24/

Dated: 27/08/2024

Name of the Department: Chemistry

Name of the Minor Degree: Minor Degree in Materials for Green Technology

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1.	CHMC301	Green Chemistry and Technology	3-0-0	3	V	All Branches	40
2.	CHMC302	Catalysis	3-0-0	3	VI	All Branches	40
3.	CHMC401	Renewable Energy Technology	3-0-0	3	VII	All Branches	40
4.	CHMC402	Advanced Instrumentational Techniques	3-0-0	3	VIII	All Branches	40

(Minati Baral)
HOD

To
Dean (Academic)

NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119

Name of Department: **Humanities & Social Sciences**
Name of the Minor Degree: **Minor Degree in Economics**

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	HSME-302	Business Statistics	L-3	3	V	All	30
2	HSME-303	Mathematics for Economic Analytics	L-3	3	VI	All	30
3	HSME-402	Basic Econometrics	L-3	3	VII	All	30
4	HSME-403	Economics of Health and Education	L-3	3	VII	All	30
5	HSME-404	Data Analysis Using Application Softwares	L-3	3	VIII	All	30

29/08/24

Head of Department
(Signature & Seal)

NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119

Name of Department: **Humanities & Social Sciences**

Name of the Minor Degree: **Minor Degree in Psychology**

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	HSMP-302	Creativity and Innovation	L-3	3	V	All	30
2	HSMP-303	Thinking Process & Decision Making	L-3	3	V	All	30
3	HSMP-304	Mental Health and Wellbeing	L-3	3	VI	All	30
4	HSMP-305	Organizational Psychology	L-3	3	VI	All	30
5	HSMP-306	Artifical Intelligence: Psychology Perspectives	L-3	3	VI	All	30
6	HSMP-401	Cyber Psychology	L-3	3	VII	All	30
7	HSMP-402	Social Psychology	L-3	3	VII	All	30
8	HSMP-403	Positive Psychology	L-3	3	VIII	All	30

29.08.24

Head of Department

(Signature & Seal)

Mathematics Minor Degree Course

Scheme and Syllabi

At least five subjects (with minimum 15 credit points) are to be choosen to earn a minor in "Mathematics".

Course Code	Name of the Subject	L	T	P	C
MAPC 421	Mathematical Foundations for Machine Learning	3	0	0	3
MAPC 422	Statistics for Data Science	3	0	0	3
MAPC 423	Mathematical Foundations for Data Science	3	0	0	3
MAPC 42*	Any one subject from Group A	3	0	0	3
MAPC 42*	Any one subject from Group B	3	0	0	3
		Total Credits			15

Group A   Group B

Course Code	Name of the Subject	Course Code	Name of the Subject
MAPC 424	Partial Differential Equations	MAPC 427	Complex Analysis
MAPC 425	Integral Transforms and Integral Equation	MAPC 428	Real Analysis
MAPC 426	Computational Methods for Differential Equations	MAPC 429	Modern Algebra

Name of Department: PHYSICS
Name of the Minor Degree: Minor Degree in_____ Physics

Sr. No.	Course Code	Course Name	L-T-P	Credits	Semester	Allowed Branches	No. of Seats
1	PHMC301	PHYSICS AT NANO SCALE	3-0-0	3	V	All Branches	40
2	PHMC303	NUCLEAR AND PARTICLE PHYSICS	3-0-0	3	VI	All Branches	40
3	PHMC401	THERMO DYNAMICS AND STATISTICAL PHYSICS	3-0-0	3	VII	All Branches	40
4	PHMC402	LASER PHYSICS AND APPLICATIONS	3-0-0	3	VIII	All Branches	40

Head of Department
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National Institute of Technology
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To
Dean Academic