

TEZPUR UNIVERSITY

About Tezpur University

Tezpur University is a Central University established by an Act of Parliament in 1994 and located in the scenic town of Tezpur, Assam, India. The university is known for its academic excellence, multicultural environment, research focus, and strong national and international collaborations.

The campus spreads over a large green area near the Brahmaputra River, providing a peaceful and student-friendly atmosphere for learning and innovation.

Why Choose Tezpur University?

- Centrally funded Indian university with high academic standards.
- Wide range of undergraduate, postgraduate and doctoral programs.
- Affordable tuition and living costs.
- Safe, eco-friendly and multicultural campus.
- Modern hostels, library, laboratories and sports facilities.
- Growing international collaborations and exchange programs.

Location Advantage

Tezpur is known as the "Cultural Capital of Assam" and offers a pleasant climate, rich heritage and connectivity by road, rail and air. The nearest airport is Tezpur Airport and Lokpriya Gopinath Bordoloi International Airport (Guwahati), well connected to major Indian cities.

International students enjoy a peaceful lifestyle with access to nature, tourism spots, and local hospitality.

Academic Programs Offered

Tezpur University offers programs through various schools:

- **Schools of Studies**
 - **School of Sciences**
 - **School of Humanities and social Sciences**
 - **School of Engineering**
 - **School of Management Sciences**
 - **School of Multidisciplinary Studies**
- **Department Wise Programmes Offered**

Department	Programmes	Duration
Cultural Studies	M.A	2 years
	Ph.D.	
Education	B.Ed.	2 years
	Integrated B.Sc. B.Ed.	4 years
	M.Ed.	2 years
	M.A in Education	2 years
	Ph.D. in Education	
English	Integrated M.A	5 years
	M.A	2 years
	Ph.D.	
Foreign Languages	B.A. in Chinese	4 years
Hindi	M.A in Hindi	2 years
	M.A. in Translation Studies	2 years
	Ph.D.	
Law	Master of Law (LLM)	2 years
	Ph.D. in Law	
Linguistic and Language Technology	B.A. (Honours) in LLT	4 years
	M.A in LLT	2 years

	Ph.D.	
Mass Communication and Journalism	M.A	2 years
	Ph.D.	
Social Work	M.A	2 years
	Ph.D.	
Sociology	B.A. (honours)	4 years
	M.A	2 years
	Ph.D.	
Women Studies	M.A	2 years
	Ph.D.	
Chemical Sciences	Integrated M.Sc. in Chemistry	5 years
	M.Sc. in Chemistry	2 years
	Ph.D. in chemical Science	
Environmental Science	M.Sc	2 years
	Ph.D.	
Mathematical Science	Integrated M.Sc.	5 years
	M.Sc	2 years
	Ph.D.	
Molecular Biology and Biotechnology	Integrated M.Sc. in Life Science	5 years
	M.Sc. in MBBT	2 years
	Ph.D. in MBBT	
Physics	Integrated	5 years
	M.Sc.	2 years
	Ph.D.	
Business Administration	MBA	2 years
	Master of Tourism and Travel Management (MTTM)	2 years
	Post Graduate Diploma in Financial Market	1 year

	Ph.D.	
Commerce	Integrated M.Com	5 years
	M.Com	2 years
	Ph.D.	
Applied Sciences	Ph.D.	
Civil Engineering	B.Tech	4 years
	M.Tech	2 years
	Ph.D.	
Computer Science and Engineering (CSE)	B.Tech in CSE	4 years
	M.Tech in CSE	2 years
	M.Tech in Data Science	2 years
	Master of Computer Application (MCA)	2 years
	Ph.D. in CSE	
Design	B.Des.	4 years
	M.Des	2 years
	Ph.D.	
Electrical Engineering	B.Tech	4 years
	M.Tech	2 years
	Ph.D.	
Electronics & Communication Engineering (ECE)	B.Tech in ECE	4 years
	M.Tech in Bioelectronics	2 years
	M.Tech in Electronics Design and Technology	2 years
	M.Tech in Semiconductor Technology	2 years
	Ph.D. in ECE	
Energy	Executive Development Programme in	1 year

	Renewable Energy and Energy Management	
	M.Tech in Energy Technology	2 years
	M.Tech in Solar Energy Engineering	2 years
	Ph.D. in Energy	
Food Engineering and Technology	B.Tech	4 years
	M.Tech	2 years
	Ph.D.	
Mechanical Engineering	B.Tech	4 years
	M.Tech	2 years
	M.Tech in Manufacturing Technology and Automation	2 years
	Ph.D.	
Centre for Multidisciplinary Research	Ph.D.	
Dual Degree B.Tech-MBA	Civil Engineering/ Computer Science and Engineering/ Electrical Engineering/ Electronics & Communication Engineering/ Food Engineering and Technology/ Mechanical Engineering and Business Administration	5 years

Admission Process for International Students

Eligibility

- Valid educational qualifications equivalent to Indian standards.
- English proficiency.
- Passport and student visa.

Application Steps

1. Online application through Tezpur University portal.
2. Upload academic records and documents.
3. Screening and shortlisting.
4. Offer letter issuance.
5. Visa and enrollment.

Fees and Cost of Living

Tezpur University offers affordable education compared to many global universities.

- Tuition Fees: Program dependent.
- Hostel Fees: Economical and inclusive.
- Living Cost: Low compared to metro cities.

Students can manage comfortably with modest monthly expenses.

Hostel and Accommodation

The university provides separate hostels for international students with:

- Furnished rooms
- Wi-Fi access
- Dining facilities
- Medical support
- Security services

Off-campus accommodation options are also available nearby.

Student Support Services

- International Students Cell
- Academic Advising
- Health Centre

- Counseling Services
- Language Support
- Cultural Exchange Programs

The university ensures smooth academic and social integration of international students.

Campus Life and Activities

Students participate in:

- Cultural festivals
- Sports events
- Clubs and societies
- Research seminars
- Community engagement

The diverse campus promotes leadership, creativity and cross-cultural learning.

International Collaboration

Tezpur University collaborates with foreign universities and institutions for:

- Student exchange programs
- Joint research
- Faculty exchange
- Academic networking

International students gain global exposure during their studies.

Visa and Immigration Support

The International Students Cell assists students with:

- Visa guidance
- FRRO registration

- Stay extension
- Compliance with Indian regulations

Join Tezpur University – Where Global Minds Meet Excellence

This prospectus is designed to help international students explore academic opportunities, campus life and support services at Tezpur University.

STUDY ABROAD

World-Class Partners

The University has tied up with several top rated educational/research institutions as well as with industry by signing MoUs. Some of the notable international collaborations are:

- KTH Royal Institute of Technology Stockholm, Sweden
- University of Auckland, New Zealand
- Vietnam Military Medical University, Hanoi, Vietnam
- University of Malaya, Malaysia
- Queen's University Belfast, UK
- National Chung Hsing University, Taiwan
- Institute of Materials and Environmental Chemistry, Budapest, Hungary
- University College of London
- International Institute of Social History, Amsterdam, Netherlands
- Yunnan University of Finance and Economics, China

University of Southampton under the UK-India Education and Research Initiative (UKIERI)

Admission Information

A student willing to join the University for various programmes will get the information about the application form and the information on the eligibility requirements, courses available, and admission procedure from the website of the University (Directorate of International Affairs, Tezpur University).

Provisional Admission Form

The application for provisional admission is to be submitted to the DIA along with the prescribed fees on or before the last date specified. DIA will check the eligibility with relevant academic departments and issue the provisional eligibility letter. This is required to get the visa and to complete other formalities.

Provisional Admission Procedure

For provisional admission, students will have to report to the DIA office and DIA will coordinate with the concerned departments for online registration as per university procedure. The prescribed eligibility fee must be deposited along with the online generated form before the last date specified.

Attach with the application form photocopies of the statement of marks of the last qualifying examinations duly attested by:

- Indian Embassy in the country of the student, or
- High Commissioner of the country of the student in India, or
- Ministry of Education in the country of the student.
- Migration Certificate in original has to be produced once admission is confirmed. This is obligatory for those coming from any other statutory Indian University.

In the case of a PhD programme, enclose 6 (six) copies of the outline of the proposed research along with the application form. The DIA will issue the provisional eligibility letter after scrutinizing the forms and based on credentials verified by the University and the Association of Indian Universities.

Visa Application

A foreign student will require a visa endorsed only to TU for joining a full-time programme. No other endorsement is acceptable. Visa should cover the duration of the academic programme.

English Language Proficiency

Foreign students should have a certificate of English language proficiency issued by a recognized language institute such as TOEFL or IELTS or by a duly qualified University teacher of English.

Pre-Arrival Support: International Welcome Programme/Orientation

Students will have to attend a brief orientation programme soon after arrival. Student volunteers and designated faculty members will also assist students during the initial settling down period.

Accommodation

Tezpur University follows a policy of providing hostel accommodation to all its foreign students. DIA does a certain amount of hand holding. The University has effective support systems for all its students, including foreign ones.

ADMISSION AT A GLANCE

Candidates seeking admission into various programmes of Tezpur University for the academic session 2025-26 must apply through the <https://www.tezu.ernet.in/academic/admission2025/> by choosing appropriate application forms. There are multiple channels of entry into various programmes of Tezpur University with distinct selection criteria, which have been enlisted in the following Table.

Programme Type	Programme Name	Entry Channel	Selection Criteria	Remarks
UG	B.Tech	1. JEE (Main) 2. CUET-UG (Only for B.Tech in Food Engg & Tech)	All India Rank (CRL) of JEE (Main)	60% seats reserved for permanent residents of Northeast India for filling up through TU admission portal. 40% seats are open for filling up through CSAB/ JoSAA
	B.Tech (Lateral Entry)	TUEE	TUEE Score	
	B.Des	1. UCEED(IITB) 2. UG NID DAT 3. JEE (Mains) 4. TUEE	Valid score of UCEED (IITB)/UG NID DAT/JEE (Mains) TUEE	60% of the seats are reserved for Northeastern states
	BEd	1. TUEE 2. CUET	TUEE/CUET Score	25 Nos of seats are reserved for Science candidates and the remaining 25 Nos of Seats are reserved for Arts and Commerce candidates.
	B.A in Chinese	1. CUET-UG 2. Direct admission based on 10+2 marks	CUET-UG 2025 Score /Higher Secondary (10+2) percentage of Marks in any stream	No minimum age for admission
	BA in Linguistics and Language Technology	CUET-UG	CUET-UG Score	
	BA in Sociology	CUET-UG	CUET-UG Score	
M.Tech	1. GATE 2. TUEE 3. CUET-PG	Valid GATE score/TUEE Score/ CUET Score	Unfilled seats earmarked for admission through GATE score may be filled	

				by TUEE year or CUET-PG Score
PG	1. MA 2. MSc (Other than MSc in MBBT) 3. LLM 4. MTTM 5. MCA 6. M.Com 7. M.Ed	1. TUEE 2. CUET-PG	TUEE Score/CUET Score	
	Master of Translation Studies	TUEE	TUEE Score	
	MSc in MBBT	GAT-B	Valid GAT-B Score	
	MDes	1. CEED 2. GATE 3. DAT 4. TUEE	CEED/ GATE/ DAT or TUEE Score, portfolio and Personal Interview (PI)	
	MBA	1. CAT 2. MAT 3. CMAT 4. XAT 5. ATMA	Valid CAT/MAT/CMAT/XAT/ATMA score, Group Discussion and Personal Interview(PI)	
Integrated and Dual Degree	1. Integrated M.Com 2. Integrated M.Sc 3. Integrated MA	CUET-UG	CUET(UG) Score	
	Dual Degree B.Tech-MBA	JEE(Main)	All India Rank (CRL) of JEE (Main)	Application and admission process is separate from B.Tech Admission and Counselling process
	PhD (Except Applied Mathematics, Assamese, English, Commerce, MBBT,	1. Joint CSIR UGC NET 2. UGC NET 3. TUEE 4. SLET (or	Joint CSIR UGC NET) SLET (LS)/GATE/CEED/TUEE Score and Personal Interview	

PhD	Business Administration, Education and Hindi	SET) 5. GATE 6. CEED 7. ICAR NET		
	PhD in English, Commerce, MBBT, Business Administration, Education and Hindi	1. UGC CSIR UGC NET 2. UGC NET 3. SLET (or SET) 4. GATE 5. ICAR NET	Joint CSIR UGC NET / SLET (LS)/GATE Score and Personal Interview	There will be no admission to PhD in Applied Mathematics, Assamese, and Women Studies during Autumn 2025.
Diploma	Post Graduate Diploma in Financial Market	Direct Admission through Tezpur University Admission Process	Bachelor degree marks (minimum 45%)	i. There is no restriction on age. ii. Selection of the students will be done based on the Graduation marks.

ACADEMIC PROGRAMMES OFFERED AND ELIGIBILITY

UG Programmes and Eligibility

Candidates seeking admission to the undergraduate programmes offered by Tezpur University are required to appear in the CUET-UG 2025 to be conducted by NTA, New Delhi and admission will be based on score obtained in CUET-UG 2025. For admission into B. Des programme, candidates must have valid UCEED 2025 (IITB)/DAT 2025 Prelims (UG: NIDA) scores / qualified or must have qualified TUEE 2025.

Sl No.	Name of the Programme	Intake	Eligibility
1	Integrated MSc in Chemistry (4+1 Years as per NEP 2020)	25	10+2 standard pass with minimum 60% aggregate marks or equivalent grade point with Chemistry as one of the core subjects.
2	Integrated MSc in Life Sciences (4+1 Years as per NEP 2020)	25	10+2 standard pass with minimum 60% aggregate marks or equivalent grade point in Biology, Chemistry, Physics and/or Mathematics.
3	Integrated MSc in Mathematics (4+1 Years as per NEP 2020)	25	10+2 standard pass with minimum 60% aggregate marks or equivalent grade point in Mathematics, Physics and Chemistry.

4	Integrated MSc in Physics (4+1 Years as per NEP 2020)	25	10+2 standard pass with minimum 60% aggregate marks or equivalent grade point in Chemistry, Physics and Mathematics.
5	Integrated MCom (4+1 Years as per NEP 2020)	33	10+2 standard pass with minimum 60% aggregate marks or equivalent grade point, where applicable.
6	Integrated MA in English (4+1 Years as per NEP 2020)	25	10+2 standard pass in any stream with minimum 60% aggregate marks or equivalent grade point with General English as one of the compulsory subjects.
7	BDes	30	10+2 with Science/ Arts & Humanities /Commerce with minimum 60% marks or equivalent grade and passed any one relevant combination of subjects individually with English / MIL as a compulsory subject in board final examinations conducted by a Central or State Boards.
8	BA in Chinese	20	Minimum Requirement 45% Pass marks in aggregate in 10+2 from any recognized State or Central Board of Education in any stream of Humanities, Commerce, Science.
9	BA in Linguistics and Language Technology	15	10+2 standard pass in any stream with minimum 60% aggregate marks or equivalent grade point with General English as one of the compulsory subjects.
10	BA in Sociology	15	10+2 standard pass in any stream with minimum 60% aggregate marks or equivalent grade point with General English as one of the compulsory subjects.

Duration: Minimum: 10 semesters; Maximum: 14 semesters (except for BDes and BA in Chinese - Minimum: 8 semesters; Maximum: 12 semesters)

BTech Programmes and Eligibility

Candidates seeking admission to the BTech programmes are required to appear in the JEE (Main) – 2025 to be conducted by NTA, New Delhi. All admission shall be on the basis of JEE (Main) - 2025 All India Rank/CRL.

Sl. No	Programme	Intake	Common Eligibility
1.	Civil Engineering	68	10+2 standard or equivalent examination with minimum 60% aggregate marks or equivalent grade point, where
2.	Computer Science and Engineering	68	
3.	Electrical Engineering	38	

4.	Electronics and Communication Engineering	68	applicable and pass marks or equivalent grade point in (1) Physics, (2) Mathematics, (3) Language, (4)Chemistry/Biology/Biotechnology/Technical vocational subject (any one of them), and (5) any other subject.
5.	Food Engineering and Technology*	56	
6.	Mechanical Engineering	68	
7.	Dual Degree BTech-MBA	30	

Duration: Minimum: 8 semesters; Maximum: 12 semesters (except for Dual Degree BTech-MBA - Minimum: 10 semesters; Maximum: 14 semesters)

Lateral Entry to the 2nd year of BTech Programmes and Eligibility

1. As per the provisions of AICTE, engineering diploma holders may apply for admission to the 2nd year of existing B.Tech. programmes at Tezpur University.
2. Candidates seeking admission must appear for TUEE-2025 to be conducted by Tezpur University through CBT mode across India.

Sl. No.	Programme (Lateral Entry for BTech in)	Intake	Eligibility
1.	Civil Engineering	03	Passed minimum 3 years/2 years (Lateral Entry) diploma examination with at least 45% marks (40% marks in case of candidates belonging to reserved category SC/ST) in the respective branch of Engineering and Technology
2.	Computer Science and Engineering	03	
3.	Electrical Engineering	06	
4.	Electronics and Communication Engineering	06	
5.	Mechanical Engineering	06	
6.	Food Engineering and Technology	06	

Eligibility and Intake for Lateral Entry

Duration: Minimum: 6 semesters; Maximum: 10 semesters

Note:

1. Exact number of candidates to be admitted in each discipline will be notified separately on the university webpage after facilitating internal branch sliding among continuing students.
2. Candidates, who are appearing for the final year of diploma examinations, are also eligible, subject to the condition that they shall submit the provisional certificate at the time of admission, along with final grade sheet to support fulfilment of eligibility criteria.

Candidates with GATE score will be given preference. If the seats are vacant due to non-availability of GATE qualified candidates, such vacant seats will be filled through TUEE-2025 test to be conducted in CBT mode across India by Tezpur University and CUET-PG 2025 conducted by NTA. 80% of the seats are reserved for TUEE-2025 qualified candidates and 20% of seat is reserved for CUET-PG 2025 qualified candidates. For admission into MDes, candidates with valid CEED (Conducted by IITB) /GATE / DAT (Conducted by National Institutes of Design) score will be preferred.

Eligibility and Total Intake

Sl. No.	Department	Programme	Intake	Eligibility
1.	Civil Engineering	MTech in Civil Engineering	11	BE/BTech in Civil Engineering with minimum 50% aggregate marks or equivalent grade point, where applicable.

Sl. No.	Department	Programme	Intake	Eligibility
2.	Computer Science and Engineering	MTech in Computer Science & Engineering	28	BE/BTech or equivalent Bachelor's degree in Computer Science and Engineering or MCA with minimum 50% aggregate marks or equivalent grade point. Candidates selected under GATE should have a valid GATE score in Computer Science and Information Technology (CS)
3.		MTech in Data Sciences	18	BE/BTech or equivalent Bachelor's degree in Computer Science and Engineering/ Information Technology/ Electronics and Communication Engineering/any other allied Discipline, or MCA or its equivalent degree, or MSc in Computer Science/ Information Technology/ Electronics/ Mathematics/ Statistics. Minimum 50% aggregate marks or equivalent grade point in the above qualifying exams. Candidates selected under GATE should have a valid GATE score in Computer Science and Information Technology (CS) or Data Science and Artificial Intelligence (DA).
4.	Design	Master of Design (MDes)	10	Bachelor's Degree in Design/ Engineering/ Architecture/Planning/Interior Design (10+2+4) years /4 Years Diploma in Design/4 Years BFA/Any recognized (AICTE/UGC) degree in Design related field (10+2+4) years/Master Degree in Art/Science/MCA/MSc Computer Sciences/Electronics) with minimum 50% marks in graduation/ and Post-graduation/Equivalent CGPA/CPI/Qualifying degree (Relaxation of percentage marks for the reserved categories is as per Govt. of India rules). CEED (Conducted by IITB) /GATE /DAT (Conducted by National Institutes of Design) qualified candidates will be preferred.

5.	Electronics and Communication Engineering	MTech in Bioelectronics	19	BE/BTech or equivalent Bachelor's degree in Electronics and Communication Engineering/ Instrumentation/ Chemical Engineering/ Computer Science and Engineering/ Electrical Engineering/ Biomedical Engineering/ Bioengineering/ Neuroengineering/ Genetic Engineering/ Biotechnology or MSc in Biotechnology/ Biochemistry/ Chemistry/ Polymer Science/ Physics/ Electronics/ Nano Science and Technology/ Instrumentation or MBBS with minimum 50% aggregate marks or equivalent grade point.
6.		MTech in Electronics Design and Technology	25	BE/BTech or equivalent Bachelor's degree in Electronics/ Electrical/ Instrumentation Engineering or MSc in Electronics/ Instrumentation/ Physics (Electronics as specialization) with minimum 50% aggregate marks or equivalent grade point.

Sl. No.	Department	Programme	Intake	Eligibility
		MTech in Semiconductor Technology*	18	(a) BE/BTech in Electronics/Electrical Engineering/ECE/Power Electronics/CSE/Instrumentation Engineering Or (b) MSc in Physics with specialization in Electronics, MSc in Electronics, MSc in Instrumentation, MSc in nanoscience/nanotechnology/Condensed matter or Solid-state physics
7.	Energy	MTech in Energy Technology	35	BE/BTech or equivalent Bachelor's degree in Mechanical/ Electrical/ Electronics/ Instrumentation/ Chemical/ Agricultural/ Energy Engineering / Civil/ Petroleum/ Material Science/ Engineering Physics/ Renewable Energy. Or M.Sc. in Physics/ Chemistry/ Material Science/ Engineering Physics/ Engineering Science/ Polymer Science/ Renewable Energy/ Energy/ Nanoscience/ MVoc in Renewable Energy with minimum 50% aggregate marks or equivalent grade point.
		MTech in Solar Energy Engineering*	18	BE/BTech or equivalent Bachelor's degree in Mechanical/ Electrical/ Chemical/Civil/Electronics/Instrumentation/Energy/Material Science/Engineering Physics/Engineering Science/ RenewableEnergy Or M.Sc. in Physics/ Chemistry/ Material Science/ Engineering Physics/ Engineering Science/Renewable Energy, or, MVoc in Renewable Energy with minimum 50% aggregate marks or equivalent grade point.
		Executive Development Program in Renewable Energy and Energy Management*	25	Working professional in Energy Utilities, Energy Service Company, EPC firm, Consultancy Firm, Entrepreneur etc with BE/BTech/ MSc degree

8.	Food Engineering and Technology	MTech in Food Engineering and Technology	23	BE/BTech /MSc in Food Engineering and/or Technology/ Agricultural Engineering/ Chemical Engineering and/or Technology/ Dairy Engineering and/or Technology with minimum 50% aggregate marks or equivalent grade point. Also, candidates must have Mathematics at 10+2 standard with minimum 50% marks or equivalent grade point or as a subsidiary subject in the specified degree programmes.
9.	Mechanical Engineering	MTech in Mechanical Engineering	23	BE/BTech or equivalent Bachelor's degree in Mechanical/Aerospace/Automobile Engineering or in any other relevant engineering discipline with minimum 50% aggregate marks or equivalent grade point.

Sl. No.	Department	Programme	Intake	Eligibility
10.		M.Tech. In Manufacturing Technology and Automation*	10	BE/BTech or equivalent Bachelor's degree in Mechanical/Production/Industrial/Materials/Metallurgical Engineering or in any other relevant engineering discipline with minimum 50% aggregate marks or equivalent grade point.
11.	Electrical Engineering	MTech in Electrical Engineering	12	BE/BTech or equivalent bachelor's degree in Electrical/Electronics /Electrical & Electronics / Electronics and Communication Engineering/ Mechanical/Instrumentation/ Power Engineering/Energy Engineering/ Engineering Physics/ Renewable Energy/others relevant to Electrical Engineering. Or MSc in applied and Basic Sciences/ Renewable Energy/ Energy/ Nanoscience with minimum 50% aggregate marks or equivalent grade point.

Duration: Minimum: 4 semesters; Maximum: 8 semesters

Note: * New programme from Academic session 2025-26

MA/MSc/MEd/MCA Programmes

For admission into MA/MSc programmes candidates will be selected based on the performance in the TUEE 2025 test to be conducted in CBT mode across India by Tezpur University and CUET-PG conducted by NTA. 80% of the seats are reserved for TUEE 2025 qualified candidates and 20% of seats are reserved for CUET-PG qualified candidates. For admission into MSc in MBBT, candidates will have to qualify GAT-B 2025. For admission into MBA, candidates must have a valid CAT/ MAT/ XAT/ ATMA/ GMAT/ CMAT score.

Eligibility and Total Intake

Sl. No.	Department	Programme	Intake	Eligibility
1.	Assamese	MA in Assamese	20	Bachelor's degree with at least 45% in major/honours in Assamese or Bachelor's degree with Assamese (MIL) with minimum 50% marks or equivalent grade point,
2.	Cultural Studies	MA in Cultural Studies	30	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point in the major/ honours subject, or 50% aggregate marks or equivalent grade point, if not having any major/ honours subject.
3.	Education	MA in Education	38	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point in the major/ honours subject, or 50% aggregate marks or equivalent grade point, if not having any major/ honours subject.
		MEd	50	Bachelor's degree in B.Ed/ BA. B.Ed.

Sl. No.	Department	Programme	Intake	Eligibility
				BSc BEd/B.El.Ed with 50% marks or equivalent grade. Any graduate with D.El.Ed with 50% marks in each.
		BEd	63	Bachelor's degree in any discipline (BA/BSc/BTech/BE) with minimum 55% marks or equivalent grade point,
4.	English	MA in English	63	Bachelor's degree with Major/ Honours in English with minimum 45% marks or equivalent grade point in the major/ honours subject.
5.	Linguistics and Language Technology	MA in Linguistics and Language Technology	38	Candidates must possess a Bachelor's degree with a minimum of 45% marks (or an equivalent grade point average) in a Major/Honours program in Linguistics, English, or any other allied subject. If the candidate did not complete a Major/Honours program in these subjects, they must have a minimum of 50% marks (or an equivalent grade point average) in the specified subjects and an overall aggregate of 50% marks in their Bachelor's degree.
6.	Hindi	MA in Hindi	31	Bachelor of Arts degree with at least 45% Marks in Major/ Honors in Hindi from a recognized University. Candidates not having Major / Honors in Hindi but having elective in Hindi with at least 50% Marks in aggregate.
		Master of Translation Studies*	15	Bachelor's degree with minimum 45% marks or equivalent Grade Point with adequate knowledge of Hindi and English
7.	Law	Master of Laws (LLM)	25	Bachelor's degree in Law with minimum 50% aggregate marks or equivalent grade point.
8.	Mass Communication and Journalism	MA in Mass Communication and Journalism	44	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point, in the major/ honours subject, or 50% aggregate marks or equivalent grade point, if not having any major/ honours subject.
9.	Social Work	MA in Social Work	22	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point in the major/ honours subject, or 50% aggregate marks or equivalent grade point if not having any major/ honours subject.
10.	Sociology	MA in Sociology	38	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point in the major/ honours subject, or 50%

				aggregate marks or equivalent grade point if not having any major/ honours subject.
11.	Chandraprabha Saikiani Centre for Women Studies	MA in Women Studies	30	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point, in the major/ honours subject, or 50% aggregate marks or equivalent grade point, if not having any major/ honours subject.

Sl. No.	Department	Programme	Intake	Eligibility
12.	Business Administration	MBA#	58	A Bachelor's degree in any discipline from a recognized Indian or foreign university/ institution (foreign degree must have UGC approval) with a minimum of 50% of marks (or equivalent grade) in a major subject or in aggregate. Note: Candidates who aspire for the MBA programme at Tezpur University must have a valid CAT/ MAT/ XAT/ ATMA/ GMAT/ CMAT/ CUET score.
13.		MBA (Executive)#	30	A Bachelor's degree in any discipline (except fine arts) with a minimum of 50% marks or equivalent grade in aggregate or in a major subject from a recognized Indian or Foreign University / Institution (foreign degree must have UGC approval). Full time post qualification work experience of 5 years or above is essential.
14.		Master of Tourism and Travel Management (MTTM)	19	Bachelor's degree in any discipline with minimum 45% marks or equivalent grade point, where applicable in major/ honours subject or in aggregate.
15.	Commerce	MCom	17	BCom with minimum 50% marks or equivalent grade point in major/ honours. Mathematics at degree level is desirable.
16.	Chemical Sciences	MSc in Chemistry	30	Bachelor's degree with minimum 55% marks or equivalent grade point in major/ honours in Chemistry, or 60% marks or equivalent grade point in Chemistry as well as in aggregate if not having major/ honours in Chemistry. Also, candidates should have Physics or Mathematics as subsidiary subjects in Bachelor's degree.
17.	Environmental Science	MSc in Environmental Science	38	Bachelor's degree with minimum 45% marks or equivalent grade point, where applicable in major/ honours in Physical/ Biological/ Earth/ Environmental Sciences, or 50% marks or equivalent grade point in any of the specified subjects as well as in aggregate if not having major/ honours in any of the specified subjects, or Bachelor's degree in Agriculture with minimum 50% aggregate marks or equivalent grade point.

18.	Mathematical Sciences	MSc in Mathematics	53	Bachelor's degree with minimum 45% marks or equivalent grade point in major/ honours in Mathematics/Statistics, or 50% marks or equivalent grade point, where applicable in Mathematics as well as in aggregate if not having major/ honours in Mathematics/ Statistics. Also, candidates with major/ honours in Statistics should have Mathematics as a subsidiary subject in Bachelor's degree with minimum 50% marks or equivalent grade point.
19.	Physics	MSc in Physics	38	Bachelor's degree with minimum 45% marks or equivalent grade point in major/ honours in Physics, or 50% marks or equivalent grade point in

Sl. No.	Department	Programme	Intake	Eligibility
				Physics as well as in aggregate if not having major/ honours in Physics. Also, candidates should have Mathematics as a subsidiary subject in Bachelor's degree.
20.	Molecular Biology and Biotechnology	MSc in Molecular Biology and Biotechnology	30	<p>Bachelor's degree with minimum 45% marks or equivalent grade point, where applicable in major/honours in Physical/ Biological/ Agricultural/ Veterinary/ Fisheries Science or 50% marks or equivalent grade point in any of the specified subjects as well as in aggregate if not having major/ honours in any of the specified subjects, or Bachelor's degree with minimum 50% aggregate marks or equivalent grade point in Pharmacy/Engineering/ Technology/Physician Assistant Course/ Medicine.</p> <p>For admission in MSc MBBT, candidates must have a valid GAT-B 2025 score. Out of the total 30 seats, 20 seats will be filled from all India and 10 seats are reserved for candidates of North East state domiciles with valid GAT-B score. Notification for admission will be notified separately in the University webpage.</p>
21.	Computer Science and Engineering	Master of Computer Application (MCA)	56	<p>Passed any graduation degree (e.g.: BE / BTech/ BSc / BCom / BA/ BVoc/ BCA etc.,) preferably with Mathematics at 10+2 level or at Graduation level.</p> <p>Obtained at least 50% marks (45% marks in case of candidates belonging to reserved category) in the qualifying examination.</p>

Duration: Minimum: 4 semesters; Maximum: 8 semesters (except for MBA Executive - Minimum: 3 semester; Maximum: 6 semesters)

** New programme introduced from academic session 2025-2026 #Admission is not made via TUEE.*

PhD Programmes

Candidates will be selected based on their performance in Tezpur University Entrance Examination (TUEE) 2025 followed by Personal Interview (PI). However, candidates with UGC NET-JRF/ UGC CSIR NET-JRF, UGC CSIR NET (LS)/ SLET (LS), GATE, CEED or similar examinations as specified by the University are exempted from appearing Tezpur University Entrance Examination (TUEE) 2025 but will have to appear for the PI conducted by the concern department. All candidates should

apply online for appearing in TUEE 2025 at <https://www.tezuadmissions.in/public/>.

Note: Candidates who are exempted from appearing TUEE 2025 as per para given above, still require registering online for admission at <https://www.tezuadmissions.in/public/>.

Eligibility and Research Area

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
1.	PhD in Assamese	Assamese	Post Graduate in Assamese or in any allied discipline/Subjects with 55% marks or equivalent grade	<ul style="list-style-type: none"> • Modern Assamese Literature, Film Studies & Theatre Studies • Translation Studies, Comparative Literature & Ethnic Literature • Assamese Literature & Colonial Assam, • Languages of Assam.
2.	PhD in Cultural Studies	Cultural Studies	MA in any of the disciplines in Humanities or Social Sciences with a uniformly good academic career. Candidates with UGC JRF, UGC NET or NE SET will be given preference	<ul style="list-style-type: none"> • Masculinity, Protest Music, Comparative Literature and Film Studies • Digital Culture • Design Ethnography • Media and Culture • Folklore • Visual Culture & Art History.
3.	PhD in Education	Education	Post Graduate in Education or in any allied discipline/ subjects with 55% marks.	<ul style="list-style-type: none"> • Teacher Education, School Education • Language Education, Mathematics Education • Cognitive Science, Inclusive Education • Education Technology, Blended Learning, E-Content Development • Curriculum Studies, Educational Administration and Management • Education in North East India

4.	PhD in English	English	<p>Master 's Degree with minimum 55% marks in Major/Honours in English for General, and 50% marks for SC/ST.</p> <p>M.A. in English (specialization may be in American Literature as well as in English Language Teaching, English Literature, Indian Writing in English, New Literature in English and Women's Writing in English).</p>	<ul style="list-style-type: none"> • American Literature • Critical Theory • Postcolonial Studies • Modernist Poetics • Indian Writing in English • English Language Education • Curriculum Development • Materials Production • Language Policy • Life Writing
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
				<ul style="list-style-type: none"> • Translation Studies • Travel Writing • Contemporary British Literature • Gender and Literature • New Literatures in English • Indian Vernacular Literature • Adaptation Studies • Film Studies • South Asian English Literature
5.	PhD in Hindi	Hindi	MA in Hindi	<ul style="list-style-type: none"> • Linguistics, Poetry and Journalism • Fiction and Modern Hindi Literature
6.	PhD in Linguistics and Language Technology	Linguistics and Language Technology	MA in Linguistics and Language Technology/MA in Linguistics/MA in Allied Subjects	<ul style="list-style-type: none"> • Theoretical Debates in Linguistics • Analysis of the Languages of Northeast India from Diverse Theoretical Perspectives • Language Situations and Policies • Language Endangerment and Preservation in Northeast India
7.	PhD in Mass Communication and Journalism	Mass Communication and Journalism	MA in Mass Communication, Mass Communication & Journalism/ Communication, Master of Mass Communication (MMC). Master of Journalism & Mass Communication (MJMC). Master of Science in Communication (MS Communication). MSc Communication. Master of Journalism	<ul style="list-style-type: none"> • Communication for Development • Participatory Communication • Visual Communication • New Media • Health & Society • Political and International communication • Environmental Studies and Media • Digital media and Society • Cinema studies and Gender

8.	PhD in Social Work	Social Work	MA in Social Work and allied Social Sciences such as Sociology, Psychology, Rural Development, Development Studies, Law, Public Health, Education and Management	<ul style="list-style-type: none"> • Social work and Mental Health, Disaster Management, Street Children, Suicide, Substance, and Application of Social Work Methods • Biomedical Governance, Innovation studies, Science and Technology in Rural Development • Environment and Social Work, Community Development, Gender Issues
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
				<ul style="list-style-type: none"> • Gender and Livelihood, Community Organisation and Social Development • Social Work Practice, Gender Queer Awareness, Organisational Communication and Interactive Pedagogy, North East India
9.	PhD in Sociology	Sociology	Post Graduation in Sociology / Cultural Studies/ Anthropology (with specialization in Social Anthropology)/ Economics/ History/ Political Science / Philosophy / Mass Communication /English/ Law / Management/ Social Work)	<ul style="list-style-type: none"> • Development, Migration, Urbanization • Social Movement, Agrarian Structure • Tribal Studies • Development, Governance, Health • Masculinity Studies • Agrarian Structure, Rural Livelihood, Gender • Sociology of Science • Sociology of Religion, Ritual Studies, Kinship Studies • Environment and Climate Studies
10.	PhD in Business Administration	Business Administration	MBA, MCom , MA / MSc in Economics, MA in Psychology/ Sociology/ Social Work/ Cultural Studies, MCA , MTM / MTA FCA/ FCS/ FICWA.	<ul style="list-style-type: none"> • Human Resource Management, Organization Behaviour • Accounting, Taxation, Social Development Issues • Tourism Marketing Management/ • Finance, Green Finance, Fin Tech, Agri-business, Stock Market • Tourism, Logistic & Supply Chain Management

				<ul style="list-style-type: none"> • Intellectual Property Management, Community Conserved Areas • Rural Development
11.	PhD in Commerce	Commerce	MCom, MA/MSc in Economics, FC A/ FCMA/ FCS.	<ul style="list-style-type: none"> • Corporate Finance • Corporate Sustainability • Corporate Governance • Banking • Insurance • Capital Market • Financial Market and Institutions • Behavioural Finance

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
				<ul style="list-style-type: none"> Accounting and Audit
12.	PhD in Chemical Sciences	Chemical Sciences	MSc in all branches of Chemical Science/ Physics/ Nanoscience/ Material Science/ Biotechnology/ Biochemistry / Bioinformatics/ Environmental Science. ME/MTech in allied subjects (Chemical Engineering/ Polymer Technology/ Material Sciences/ Environmental Engineering etc.).	<ul style="list-style-type: none"> Polymer Chemistry Water Purification, Theoretical Chemistry Organic Synthesis Computational & Inorganic Chemistry Ionic Liquid Based Material Electrocatalysis Molecular Magnetism Organic Chemistry Synthetic Organic Chemistry Catalysis Chemical Sensors and Biosensors
13.	PhD in Environmental Science	Environmental Science	Masters in any Science/ Applied Science / Engineering discipline with at least 55% marks or equivalent CGPA. At Bachelor's level the candidate must have attended a Science / Technology programme.	<ul style="list-style-type: none"> Atmospheric Chemistry Air Pollution Climate change and ecosystem dynamics Pollution Biology and Health Entomology Plant-Insect Interface Indoor Air Pollution Human Environment Interactions Aquatic Toxicology

14.	PhD in Mathematical Sciences	Mathematical Sciences	MA / MSc in Mathematics or MA/MSc in Statistics with requisite background in Mathematics	<ul style="list-style-type: none"> • Number Theory • Point Set Topology, Fuzzy Mathematics • Functional Analysis and Operator Theory • Graphs and Matrices, Applications of Linear Algebra • Mathematical Statistics • Computational Fluid Dynamics • Ring Theory and Finite Field Theory • Coding Theory • Functional Analysis, Fixed point theory • Algebra and Graph Theory, Applications of Linear Algebra
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
				<ul style="list-style-type: none"> Algebra and Its Applications Group Theory and Graph Theory Numerical Methods for Partial differential Equations, Finite Element Methods Fractional Differential Equations Numerical Linear Algebra
15.	PhD in Molecular Biology & Biotechnology	Molecular Biology & Biotechnology	<p>Masters in any branches of Life Sciences/ Physical Sciences/ Chemical Sciences/ Mathematical Sciences/ Agricultural Sciences / Veterinary or Sciences / Engineering Sciences /Medical Sciences or in any allied field. BTech/ BE degree with 80% marks in CGPA (with GATE score > 90.00 percentile) in Chemical Engineering/ Chemical Sciences/ Bioinformatics or any allied field. MBBS or BVSc. degree with at least 60% marks or equivalent CGPA. Apart from the above, candidates having consistently good academic records will be preferred.</p>	<ul style="list-style-type: none"> Snake Venom Biochemistry Probiotics Cancer Genetics and Preventions Inflammation Biology Bioinformatics, Computational Biotechnology Systems Biology Metabolic Disorder Plant Biotechnology Human Genetics Synthetic Biology Plant-Microbe Interaction Molecular Virology
16.	PhD in Physics	Physics	<p>MSc in Physics/ Electronics/ Geophysics/ Material Science/ Applied Mathematics/ Nanoscience and Technology/ Biotechnology/ Environmental Science and Chemical Science. MPhil in Solid State Material/ Material Science/ Electronics/Energy/ Nanoscience and Technology/</p>	<ul style="list-style-type: none"> High Energy Physics Microwave Materials & Devices Optoelectronics, Laser Physics Nano- sciences, Condensed Matter Physics, Multidisciplinary Mesoscopic Physics, Quantum Systems/ Neutrino Physics

			Biotechnology/ Environmental Science and Chemical Sciences. BTech in Engineering Physics with 80% marks in aggregate or equivalent CGPA.	<ul style="list-style-type: none"> • Applied Photonics, Biomedical Instrumentation • Applied Optics & Instrumentation • Astronomy & Astrophysics • Materials Science.
17.	PhD in Applied Mathematics	Applied Sciences	MSc/MA/ME/MTech/MS/BS - MS/ Integrated MSc Degree in Mathematics/ Statistics/Engineering Mathematics / Mathematics and Computing/ Applied Mathematics/ Operations Research/	<ul style="list-style-type: none"> • Differential Equations, Harmonic Analysis • Spectral Graph Theory • Operations Research, Inventory Modelling, Fuzzy Mathematics and

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			Mechanical Engg./ Industrial Engineering/ Computer Science and Engineering/ Information Technology/any allied subject with 55% marks in aggregate or equivalent CGPA. Or B.Tech. in Mathematics and Computing/any allied subjects with 75% marks in aggregate or equivalent CGPA with a valid GATE Score. Minimum two recommendation Letters from the Institute/ University from where BE/BTech degree was obtained	Optimization, Mathematics Modelling.
18.	PhD in Applied Physics	Applied Sciences	MSc/Integrated MSc in Physics/Astrophysics/ Electronics/ Geophysics/ Material Science/ Applied Mathematics/ Nanoscience and Technology/ Biotechnology/Environmental Science and Chemical Science. Or MPhil., MTech in Solid State Material/ Material Science/ Electronics/ Energy/ Nanoscience and Technology/ Biotechnology/ Environmental Science and Chemical Sciences. Or MS Astronomy and Astrophysics. Or BTech in Engineering Physics with 80% marks in aggregate or equivalent CGPA	<ul style="list-style-type: none"> • Theoretical Modeling of Astrophysical Flows Around Compact Object • 2D Layered Materials for Applications

	PhD in Applied Chemistry	Applied Sciences	MSc in Chemistry/Chemical Sciences/Polymer Chemistry/Polymer Science/Physics/Nanoscience/Material science/Environmental science or allied subjects OR ME/MTech in allied subjects (Chemical Engineering, Polymer Technology/Material Sciences/Environmental Engineering/Energy etc.)	<ul style="list-style-type: none"> • Polymer chemistry, • Functional Organic and Metal- Organic Polymers • Porous Materials for Energy and Environmental Applications • Energetic Materials
19.	PhD in Civil Engineering	Civil Engineering	(a) ME/MTech/ MSc(Engg) in Civil Engineering Or allied areas or (b) MSc in relevant discipline with minimum 70% marks	<ul style="list-style-type: none"> • Geotechnical Engineering • Environmental Engineering • Transportation Engineering

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			in aggregate or equivalent CGPA or (c) BE / BTech with 75% marks in aggregate or equivalent CGPA with a valid GATE Score. Minimum two recommendation Letters from the Institute/University from where BE/BTech degree was obtained.	<ul style="list-style-type: none"> • Water Resources Engineering
20.	PhD in Computer Science & Engineering	Computer Science & Engineering	MTech in Computer Science/ IT/ Electronics, MCA, MSc in Computer Science, IT or BE/BTech with 75% marks in aggregate or equivalent CGPA with a valid GATE Score. Minimum two recommendation Letters from the Institute/ University from where BE/BTech degree was obtained.	<ul style="list-style-type: none"> • Data mining, Image processing • Computer Vision and Geometry • Bio-informatics • SDN, NFV, IoT • Speech Processing • NLP/ Pattern Recognition • Machine Learning, Computer Vision • ML, V2X, Tactile Internet • ML, Trust and Reputation, EDM • Data Mining • Network security, Bioinformatics, • CRN, 5g/6G, • Optical Network, SDN • Wireless Network.

21.	PhD in Design	Design	<p>Master's Degree in Design or ME/MTech/MArch/MCA/MSc (Computer Sciences/Electronics) or Master's degree in Applied Arts/ Ergonomics/ Fine Arts/ Visual Arts/ Psychology/ Physiology/ Occupational Safety and Health/ Journalism/ Mass Media Communication, or two-year Master's degree in Management (MBA or equivalent) with relevant studies in Design field with minimum 55% marks</p> <p>OR</p> <p>Bachelor's Degree in Design /Engineering/Architecture/Planning/Interior Design (10+2+4) years / 4 Years BFA/ Recognized degree in Design related field (10+2+4) years (AICTE/UGC approved) with</p>	<ul style="list-style-type: none"> • Product Design and Design Methodology • Rural Technology and Innovation.
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			<p>75% marks in aggregate or equivalent CGPA with valid CEED/GATE Scores.</p> <p style="text-align: center;">OR</p> <p>Four-year Undergraduate Diploma in Design (NID or equivalent), with postgraduate qualification in relevant area with at least 6.0 CGPA (or 55% marks)/ A two-year Post-Graduate Diploma in Design in relevant areas (NID/CEPT or equivalent) with first class at Bachelor's level/ GD Art (5- year programme after 10th standard) with one-year professional experience, with at least 6 CGPA (or 55% marks). Valid CEED/GATE Scores will be preferred.</p>	
22.	PhD in Electrical Engineering	Electrical Engineering	<p>ME/MTech in any relevant discipline in Engineering or MBBS with MD/MS or MSc in any relevant science discipline, OR BE/BTech with 75% marks in aggregate or equivalent CGPA with a valid GATE Score. Minimum two recommendation Letters from the Institute/ University from where BE/BTech degree was obtained</p>	<ul style="list-style-type: none"> • Sensor Fabrication for Application in Food Industry, IOT & Health Monitoring, Green Energy, Sensor • Energy Storage, AI integrated renewable energy, Control Systems, electrical vehicle technology, magnetic Vehicle, nonlinear dynamics • Renewable Energy, Power System, Electronic Drives, Electric Vehicles • Power Electronics & Drives, Micro Grid, Smart Grid.

23.	PhD in Electronics & Communication Engineering	Electronics & Communication Engineering	ME / MTech / MSc Engg / MS in Electronics/ Communication/ Electronics Design/ Electrical/ Instrumentation/ Control/ Microwave/ Biomedical/ Bioelectronics/ Bio-Technology/ Computer Science/ Information Technology. or MSc in Electronics/ Physics/ Applied Mathematics. MCA with Physics, Chemistry and Mathematics in Bachelor degree, MBBS with MD/ MS degree. OR BE / BTech with	<ul style="list-style-type: none"> • Robotics, Biomedical Signal Processing • Image Processing, Computer Vision, Deep Learning- based Signal and Image Analysis, Biomedical Signal Processing • Bio-electronics, Bio-electronic Devices • Semiconductor Devices Flexible Electronics/Neuro-engineering • Semiconductor Devices, Simulation
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			75% marks in aggregate or equivalent CGPA with a valid GATE Score. Minimum two recommendation Letters from the Institute/ University from where BE/ BTech degree was obtained.	<p>and Modeling</p> <ul style="list-style-type: none"> • Bio-sensors, Quantum Technology/Machine Learning for Smart Sensing, Sensors • Sensor and Nanotechnology • Vehicular Electronics.
24.	PhD in Energy	Energy	MSc / ME / MTech degree in Energy Technology/ Energy Management /Energy related Engineering and Technology/ Physics/ Chemistry/Agriculture Allied subjects.	<ul style="list-style-type: none"> • Energy Management, Bio-energy, IoT for Biogas • Bio- fuels, Catalytic transformation of Biofuels, Energy-Environment/ Building Energy, Biomass Energy • Hybrid Energy System, Grid Integration, Instrumentation and Control • Waste Management • Fuel Cell, Green Hydrogen, Battery Supercapacitor, Hybrid UAV based Air Quality Monitor • Solar Energy, Photovoltaic, Energy Systems, Solar Hybrid Systems • Heating & Ventilation, Radiant System, Ground Source Heat

25.	PhD in Food Engineering & Technology	Food Engineering & Technology	<p>MTech/ ME/ Integrated MTech in Food Engineering and Technology/ Food and Dairy related other programme/ Mechanical Engineering/ Chemical Engineering/ Bio-process/ Bio-chemical/ Biotechnology</p> <p>Or MSc/ Integrated MSc in Food Engineering and Technology/ Food and Dairy related other programme/ Applied Microbiology/ Microbiology/ Bio-Chemistry/ Chemistry/ Biotechnology/ Biosciences and Informatics,</p> <p>Or B.E./ B.Tech. (in Food Engineering and Technology/ Food and Dairy related other programmes) with 75% marks in aggregate or equivalent CGPA with valid GATE Score.</p>	<ul style="list-style-type: none"> • Food Biochemistry and Food quality, Fermented Foods, Biochemical Engineering, Food Biotechnology • Rice Chemistry and Technology, Value Addition of Local Crops • Food Process Engineering, Food Materials Engineering, Food Industrial Engineering, Food Design • Emerging non-thermal processing, Food Rheology, Hurdle Technology • Fruits, and Vegetable technology, Function Food, Biosensors • Food Processing Waste Utilization, Extraction of Bioactive compounds • Food Packaging, Nano Composites, Nanotechnology in Edible Food
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Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			Minimum two recommendation Letters from the Institute/ University from where B.E./ B.Tech degree was obtained.	Packaging, Functionalized Coating <ul style="list-style-type: none"> • Green Storage and Structures, Fruits and Vegetable Processing and Machineries
26.	PhD in Mechanical Engineering	Mechanical Engineering	ME / MTech / MSc (Engg) in Mechanical Engineering or any other relevant Engineering branches including Chemical Engineering and Materials Science Engineering Or MSc Degree in any relevant discipline with CSIR- UGC JRF/NET Qualified certificate or a valid GATE score. Candidates other than those with MSc Mathematics must have studied Mathematics up to BSc level. Or, BE/ BTech degree with 75% marks in aggregate or equivalent CGPA with valid GATE Score. Minimum two recommendation Letters from the Institute /University from where BE/BTech degree was obtained	<ul style="list-style-type: none"> • Design and Analysis of Heat Exchangers, Thermodynamic modelling and optimization of (i) Solar thermal power and cooling systems (ii) Gas turbine based combined power systems with Steam Rankine, Organic Rankine and Kalina as bottoming cycles (iii) Vapour absorption cooling systems • Optimum design of structures and systems using evolutionary algorithms with special emphasis to multi-objective combinatorial optimization problems • Solar Thermal Energy Applications, Drying Technology Including Solar Hybrid Drying, Thermal Energy Storage • Solar Thermal Energy Storage, Material Characterization • Thermal Engineering, Heat Transfer System • Rehabilitation Robotics - Prosthetic Hand, Single

				<p>Objective and Multi- objective Optimization Facility Layout Problem, Mechatronics</p> <ul style="list-style-type: none"> • Stress Analysis, Plasticity, Autofrettage, Fracture Mechanics.
27.	PhD in Multi-Disciplinary Research	Multidisciplinary Research	Master's degree in any discipline with minimum 55% or equivalent grade from a recognized University in India or equivalent degree from abroad with a good academic career.	<ul style="list-style-type: none"> • Climate change, livelihood, natural calamities • Net zero target: technologies and issues • Technology disruption: prospect,

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			<p>Candidates with GATE, UGC/CSIR–JRF, UGC/CSIR-NET or NE-SET will be given preference. B.Tech/BE with minimum 75% or equivalent grade will also be considered eligible for PhD admission. For candidates having more than 10 years of industrial experience, minimum marks may be relaxed.</p>	<p>issues and impact of new technologies (viz., robotics, IoT, big data etc) in the contexts of society, environment and economy</p> <ul style="list-style-type: none"> • Sustainable development and developmental disparity • Indian Knowledge System towards holistic approaches for well-being and sustainability • Mental Health and well-being – innovative and technology-driven approaches of investigation • Intellectual Property Rights: policy, issues and impact • Modern Energy Storage system: Applications (e.g., e-vehicles, drones, biomedical applications) and contemporary issues • Communication for health, culture, social issues and development • Naamghar and other traditional places of worship: Modernity, Cultural vibrancy. • Sustainable garbage management: Multidisciplinary approach • Road Safety: Multidisciplinary approach handling technology advancement and human

behaviour

- Innovation in tackling environmental issues
- Pharmaceutical Research
- Renewable and Sustainable Energy System
- History of Science
- Technology and Learning
- New Applications of Mechatronics
- Multidisciplinary Research Approach

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
				<p>to Handle Plastic Waste</p> <ul style="list-style-type: none"> • Multidisciplinary Research Approach on green buildings and smart buildings • Multidisciplinary Research Approach on Social Entrepreneurship and Sustainability • Multidisciplinary Research Approach on Ethno-development and Tribal Communities • Multidisciplinary Research Approach on Peripheral Livelihoods and Archeological Studies • Multidisciplinary Research Approach on Ecological Memories and Land- based Ecosystem • Multidisciplinary Research Approach on effective Science Communication • Multidisciplinary Research Approach to Explore Scientific and Historical Impactful Literature of Local Languages

28.	PhD in Law	Law	Master's Degree in Law from any recognized University securing not less than 55% marks or its equivalent CGPA.	<ul style="list-style-type: none"> • Human Rights Law • Criminal Law • Criminology • International Law • Family Law • Constitutional Law • Child Laws • Gender and Law • Customary Laws
29	PhD in Women Studies	Chandraprabha Saikiani Centre for Women Studies	Masters degree with at least 55% marks in Women Studies/ Humanities/ Social Sciences with consistently good academic record. Candidates with a Masters degree in Humanities and Social Sciences having	Women's history, feminist research methodology, women and development, women and health.

Sl. No.	Programme	Department/ Centre	Eligibility	Research Areas
			one course in the area of women studies will be preferred.	

B. SYLLABUS FOR TUEE 2025

Undergraduate Programme

Sl. No.	Name of the Programme
	Branch: BDes (Bachelor Degree in Design)
1.	<p>Visualization and spatial reasoning: Ability to visualise and transform 2D shapes and 3D objects and their spatial relationships.</p> <p>Practical and scientific knowledge: Know-how of scientific principles and everyday objects.</p> <p>Observation and design sensitivity: The capacity to detect concealed properties in daily life and think critically about them. Attention to detail, classification, analysis, inference and prediction.</p> <p>Environment and society: General awareness of environmental, social and cultural connections with design.</p> <p>Analytical and logical reasoning: Ability to analyse qualitative and quantitative information.</p> <p>Language: Proficiency in reading and comprehending Standard English.</p> <p>Creativity: Grasp of verbal and non-verbal analogies, metaphors, signs and symbols.</p>

Lateral Entry to the 2nd year of B Tech. Programmes

Sl. No.	Name of the Programme
	Branch: Civil Engineering
1.	<p>Mathematics Complex Numbers, Partial fractions, Permutation and combination, Binomial Theorem, Series, Trigonometric Ratios, Properties of Triangle, Volume and Surface Area, Co-ordinate Geometry, Functions, Differentiation, Integration, General aptitude and reasoning.</p> <p>Civil Engineering Building Construction & Materials, Civil Engineering Drawing, Surveying, Structural Mechanics, Hydraulics, Concrete Technology, Transportation Engineering, Design of RCC Structure, Geotechnical Engineering, Design</p>

of Steel Structure, Environmental Engineering & Pollution Control, Water Resources Engineering.

2.

Branch: Computer Science and Engineering

10+2 level Physics and Mathematics

1. C/C++ programming
2. Algorithms and Data Structures
3. Array, stack, queue, linked list, sorting, selection, searching.
4. Basic Electronics and Digital Logic

5. Digital circuits and signals, Logic Families, Logic Gates and Boolean algebra, Number Systems.
6. Computer Networks
7. Basic concepts, Network Classifications, Network topology, OSI model, Basics of TCP/IP.
8. Database Management Systems
9. Basic concepts, ER model, Relational model, Query languages.
10. Communicative English

Branch: Electrical Engineering

CORE ELECTRICAL

3.
 - **DC Circuit Analysis:** Electric Circuits Laws: Basic electric circuit terminology, Ohm's law, Kirchhoff's current law (KCL) and Kirchhoff's Voltage law (KVL), circuit parameters (resistance, Inductance and capacitance), series and parallel combinations of resistance, Inductance and capacitance, Nodal analysis. Energy Source, Ideal and Practical voltage and current sources and their transformation, Dependent voltage sources and dependent current sources, D.C. Circuit Analysis, Power and energy relations, Analysis of series and parallel DC circuits, mLoop and Nodal methods of circuit analysis, Superposition theorem, Thevenin's and Norton's theorems, maximum Power theorem, Delta - star (Y) Transformation.
 - **A.C. Circuit Analysis:** Basic terminology and definitions, Phasor and complex number representation, solutions of sinusoidally excited RLC circuits, Power and energy relations in A.C. circuits, Applications of network theorems to A.C. circuits, Resonance in series and parallel circuits, Concepts of active & reactive powers.
 - **Steady State A.C three phases Circuits:** Concept of a 3-phase voltage, wye (Y) circuits. Delta (Δ) circuits, Current and voltage relations in Y and Δ Circuits, Characteristics of a 3-phase system, Magnetically Coupled circuits, Mutual inductance.
 - **Single Phase Transformers:** Introduction, classification, construction, electromotive force (e. m. f.) equation, Equivalent circuit model, Phasor diagrams, Losses and efficiency, Voltage regulation, Transformer tests (polarity test, open circuit test and short circuit test), Auto-transformers
 - **Direct current Generators:** General introduction, principles of operation of D.C Generators, construction of D.C Generators, Types of DC Generators, e.m.f equation, Types of windings, power stages and efficiency, commutation and armature reaction, characteristics of D.C Generators.
 - **Direct current Motors:** Principles of operation of D.C Motors, construction of D.C Motors, Types of DC Motors, Back e.m.f and Torque equation, torque and speed of D.C Motors, characteristics of various types of D.C motors, speed control of D.C motors.
 - **Induction Motors:** Construction and working principle of 3 phase Induction motors, types of rotors, rotating magnetic field, slip, effect of slip on rotor parameters, torque equation, torque-speed characteristics, effect of rotor

resistance on torque-speed characteristics, Single phase induction motors, starting and applications.

PHYSICS:

Vector Analysis, Collision of particles, Vibration and acoustics, Electromagnetic Theory, Maxwell's equations, Quantum mechanics, Solid state physics, Superconductivity, Diffraction, Special Theory of Relativity.

MATHEMATICS:

Differential Calculus, ordinary, linear and non-linear differential equations, Partial Differential Equations, Fourier series, Matrices.

1. **Materials and Components:** Structure and properties of Electrical Engineering materials: Conductors, Semiconductors and Insulators, Magnetic, Ferroelectric, Piezoelectric, Ceramic, Optical and Super conducting materials. Passive components and characteristics Resistors, Capacitors and Inductors; Ferrites, Quartz crystal Ceramic resonators, Electromagnetic and Electromechanical components.
2. **Physical Electronics Electron Devices and ICs:** Electrons and holes in semiconductors, Carrier Statistics, Mechanism of current flow in a semiconductor, working principle and basic structure of BJTs and FETs.
3. **Network Theory:** Network analysis, Loop Analysis, Mesh Analysis; Network Theorems, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity Theorem, Millman's Theorem, Star-Delta Connections, Two port networks.
4. **Electronic Measurement sand Instrumentation:** Basic concepts, standards and error analysis; Measurements of basic electrical quantities and parameters; Electronic measuring instruments and their principles of working; analog and digital, comparison, characteristics, application Transducers; Electronic measurements of non-electrical quantities like temperature, pressure, humidity, etc.
5. **Analog Electronic Circuits:** Transistors biasing and stabilization, small signal analysis, power amplifiers, frequency response, wide banding techniques, feedback amplifiers, Tuned amplifiers, Oscillators, Rectifiers and power supplies, Op Amp.
6. **Digital Electronic Circuits:** Binary number system, Octal, Hexadecimal and BCD numbers system, Boolean algebra, simplification of Boolean functions, Karnaugh map and applications, IC logic, Combination logic circuits, Half adder, Full adder, Digital comparator, Multiplexer, De multiplexer, Flip Flops, R-S, J-K, D and T flip-flops, different types of counters and registers, A/D and D/A converters, semiconductor memories.
7. **Control Systems:** Types of Control system, Open Loop and Closed Loop Control system, Effect of feedback on stability and sensitivity; Block Diagram Reduction Technique, Signal Flow Graph, Stability Analysis, Routh's Stability Criterion.
8. **Communication System:** Basic Mathematical Tools like Fourier Series, Modulation and detection in analogue and digital system; Sampling and data reconstructions; Propagation of signals at HF, VHF, UHF and microwave frequency.
9. **Computer Engineering:** Number system, Data representation Programming; Elements of a high level programming language PASCAL/C, use of basic data structures, Fundamentals of computer architecture, processer design, control unit design, memory organization, I/O system organization, microprocessors, architecture and instruction set of microprocessors 8085, Assembly language programming.

Branch: Mechanical Engineering

Engineering Mechanics: Force systems, force, moment of a force about a point and about an axis, couple moment as a free vector, equivalent force systems; Equilibrium, free body diagram, equations of equilibrium, problems in two and three dimensions; Kinematics and Kinetics of particles, particle dynamics in rectangular coordinates and in terms of path variables, Newton's law for rectangular coordinates, Newton's law for path variables, central force motion; Energy, kinetic energy, potential Energy, conservation of energy.

5.
 1. **Solid Mechanics:** Introduction, stress at a point, types of stress, strain, shear and normal strain. stress-strain diagram, true stress and true strain, Hooke's law, Poisson's ratio, material properties for isotropic materials and their relations, generalized Hooke's law, stress-strain relationship; Elastic constants, Young's modulus, shear modulus, Poisson's ratio, relationships between elastic constants.
 2. **Machine Design:** Static and dynamic loading, threaded joints, riveted joints, welded joints, design of gears, belt drives, brakes, bearings.

3. **Theory of Machines:** Mechanism and machines, flywheel, friction, gears, kinematic analysis. Thermodynamics: Basic definitions, thermodynamic systems and properties, thermodynamic processes and cycles; Different types of work and heat transfer; First law of thermodynamics, internal energy, enthalpy, non-flow and flow processes; steady state, steady flow energy equation (SFEE); Second law of thermodynamics, Kelvin Plank and Clausius statement, irresistibility, Carnot cycle and Carnot's theorem, applications of the second law to closed and open systems, heat engine, heat pump and refrigerator, entropy, Clausius theorem, Clausius inequality, entropy principle and its application, entropy generation in closed and open system, absolute entropy; Available energy; Vapour power cycles.
4. **Heat Transfer:** Steady state heat conduction, 1-D heat conduction equations in plane wall, heat generation, conduction through multilayer walls, heat conduction in cylinders and spheres, critical radius of insulation, heat transfer through extended surfaces, fin efficiency; Radiation heat transfer, radiation intensity, emissive power etc., radiation shield, shape factor; Convection heat transfer: introduction to natural and forced convection, internal and external flow, various dimensionless numbers; Heat exchangers: parallel flow, counter flow, cross flow heat exchangers, multi-pass shell and tube exchangers, phase change heat exchangers, LMTD and NTU methods; Introduction to mass transfer, Fick's law of mass diffusion.
5. **Fluid Mechanics:** Concept of fluid and fluid properties, Newton's Law of viscosity; Fluid Statics, forces on fluid element, different types of pressure and measuring instruments, hydrostatic forces on plane and curved surfaces, buoyancy and stability of submerged and floating bodies; Fluid kinematics, steady, unsteady, uniform and non-uniform flow, laminar and turbulent flow, streamline, path line, streak line; Equations for conservation of mass, momentum and energy, Euler's and Bernoulli's equation, measurement of flow through pipes and different flow measuring devices; Dimensional analysis, kinematic and dynamic similarity, various dimensionless numbers; Potential flow, stream function, vorticity, velocity potential, uniform flow, major and minor losses, friction factor; Boundary layer equations, the flat plate boundary layer; Introduction to compressible flow; Impulse and reaction turbine, Pelton wheel, Francis and Kaplan turbine, Rotodynamic and positive displacement pumps, reciprocating pump, centrifugal pump, specific speed, cavitation.
6. **IC Engine:** Construction and working principle of SI and CI engines, Construction and working principle of four stroke and two stroke engines, theoretical cycles used in IC engines, performance analysis of IC engines.
7. **Materials Science:** Classification and properties of engineering materials, bonds in solids and characteristics of metallic bonding, general classifications, properties and applications of alloy steel, stainless steel, cast iron and non-ferrous materials; Crystal systems and imperfections, crystallography, Miller Indices for directions and planes, voids in crystals, packing density, crystal imperfections, point, line, surface and volume defects; Phase Diagrams and Phase Rules, principles and various types of phase diagrams, Fe-Fe₃C diagram, TTT and CCT diagrams; Heat treatment in steels, pearlitic, bainitic and martensitic transformations.

8. **Manufacturing Technology:** Rolling, extrusion, sheet-metal forming, forging, welding, mechanism of metal cutting, machining processes, machinability; Modern machining processes.
9. **Industrial Engineering:** Work study, method study and work measurement; Plant layout, types of production, types of layout, tools and techniques for plant layout; Project scheduling, PERT and CPM; Production control, Gantt chart; Material handling.

Branch: Food Engineering and Technology

6.

Part-I: General Engineering: Thermodynamics, Heat & mass transfer, Fluid mechanics (weight age: 40%)

1. **Engineering Thermodynamics:** Zeroth law, first law, second law. Concepts of enthalpy, internal energy, entropy and absolute temperature. Properties of pure substances and mixtures, reversibility and irreversibility. Thermodynamics cycles.

Refrigeration and air conditioning: Refrigeration cycles, heat pump. Application of refrigeration in food processing and preservation. Food freezing systems. Steam: steam generation, steam properties and application. Psychometrics: properties of air water vapor mixer; psychrometric properties, charts and relations and psychrometric calculations.

2. **Heat and Mass Transfer:** Principles of heat and mass transfer to heat, different methods of heat transfer, Fourier's Law, Steady state heat transfer through plain and composite slabs, cylindrical and spherical surfaces. Natural and forced convection, concept of overall heat transfer coefficient, LMTD, heat exchangers in food processing, effectiveness of heat exchanger. Fick's Law of diffusion and basic concepts of convective mass transfer.
3. **Basic Fluid Mechanics:** Physical properties of fluids, classification of fluid flow, continuity equations, Bernoulli's equation and its application, steady state flow equation, concept of viscosity, Newtonian and non-Newtonian fluids. Poiseuille's equation. Navier Stoke's equation, flow through parallel plates and circular pipes. Concept of Reynold's number and its application. Pipe and pipe flow, fittings. Pumps, types of pumps and their application and selection.

Part-II: Food Engineering and Technology (weightage: 60%)

1. **Food Engineering Operations:** Materials and introduction, energy balance for food engineering processes. Size reduction, mechanical expression, mechanical separation, mixing and agitation, emulsification, and homogenization. Filtration, membrane separation, sedimentation, centrifugation, crystallization, extraction, distillation, absorption, humidification, and dehumidification. Thermal processing of foods, Food concentration: Evaporation, equipment, their selection and calculation. Freeze concentration. Drying and dehydration methods, different kinds of dryers, their selection and design.
2. **Food Microbiology:** Microbiology and reproduction of bacteria. Pure culture technique: serial dilution, pour plate, streak plate, spread plate, slant, broth and enrichment culture, lyophilization. Microbial Growth: Definition, Growth curve, account of different phases, synchronous growth, doubling/generation time. Relationship between number of generations and total number of microbes. Disinfecting agents and its dynamics. Enzymes, specificity of enzymes, co enzymes, cofactors, Enzymes inhibitors and activators. Applications of enzymes in food industry, immobilized enzymes. Definition, scope and present status of Biotechnology and its applications, Microbial propagation and production of SCP, Fermentation: Fermented and non-Fermented food, cereal fermentation.
3. **Food Chemistry:** Importance of different food constituent, Carbohydrate and its classification and functions. Proteins, classification, and properties of amino acids. Lipid's structure, physical and chemical properties. Vitamins and minerals in food. Food spoilage: Types and factors, Food enzymes. Food preservation techniques: Addition of salt, sugar, oil, spices, preservative, drying, evaporation, heat treatment, irradiation,

refrigeration, freezing, plant physiology: Transpiration, Ripening, Senescence, Post-Harvest technology and its importance, Climacteric and non-climacteric fruits.

4. **Food Product technology:** Parboiling, Milling of rice, wheat, malting, storage atmospheres: Quality control and quality assurance, different quality attributes: qualitative, hidden and sensory, HACCP and its application, Food adulteration: types, Estimation of moisture, crude, fat, proteins, crude fibre, ash, sampling and its types, BIS, AGMARK, FPA, PFA, FAO, FSSAI.

- *Exact number of candidates to be admitted in each discipline will be notified separately on the university webpage after facilitating internal branch sliding among continuing students.*

MTech/MA/MSc Programmes

Sl. No.	Department and Programme Name
	Department: Civil Engineering Programme: MTech in Civil Engineering (Specialization – Geotechnical Engineering)
1	BE/BTech level courses in Civil Engineering
2	<p style="text-align: center;">Department: Computer Science and Engineering Programme: MTech in Computer Science & Engineering</p> <ul style="list-style-type: none"> ▪ Analytical Reasoning. ▪ Data Structures: Array, Stack, Queue, Linked List, Binary Tree, Heap, Graphs, AVL Tree, B-tree. ▪ Graph Theory: Paths and Cycles, Connected Components, Trees, Digraphs. ▪ Discrete Mathematics: Sets and Sequences Counting, Logic & Proofs, Recurrence Relations. Algebra of Matrices, Determinant, Eigenvalues and Eigenvectors of Matrices, ▪ Design and Analysis of Algorithms: Asymptotic Notation, Searching, Sorting, Selection, Graph Traversal, Minimum Spanning Tree. ▪ Formal Languages and Automata Theory: Finite Automata and Regular Expressions, Pushdown Automata, Context-free Grammar, Turing Machine, Elements of Undecidability. ▪ Digital Logic Design: Boolean Algebra, Minimization of Boolean Functions, Combinational and Sequential Circuits - Synthesis and Design. ▪ Computer Organization and Architecture: Number Representation, Computer Arithmetic, Memory Organization, I/O Organization. ▪ Operating Systems: Memory Management, Processor Management, Device Management, File Systems. ▪ Database Management Systems: Relational Model, Relational Algebra, Relational Calculus, Functional Dependency, Normalisation (2NF, 3NF and BCNF). ▪ Principles of programming: Types of programming languages, language, processors, program linking, program memory allocation, code optimization. <p>Computer Networks: OSI, LAN Technology - Bus / Tree, Ring, Star; MAC Protocols; WAN Technology - Circuit Switching, Packet Switching; Data Communications - Data Encoding, Routing, Flow Control, Error Detection/Correction, Inter- networking, TCP/IP Networking including IPv4.</p>
3	Department: Computer Science and Engineering Programme: MTech in Data Sciences

- Analytical Reasoning
- Discrete Mathematics: Permutations and Combinations, Recurrence Relations. Algebra of Matrices, Determinant, Rank and Inverse of a Matrix, Functions and Relations.
- Discrete Probability Theory: Combinatorial Probability, Conditional Probability, and Bayes Theorem. Discrete Random Variables. Expectation and Variance of Discrete Random Variables.
- Graph Theory: Graphs, Adjacency Matrix and Adjacency List representations of Graphs, Subgraphs, Connectivity, Trees and their Properties, Vertex Coloring, Planar Graphs.

	<ul style="list-style-type: none"> ▪ Algorithmic Thinking: Asymptotic Notations, Searching, Sorting, Selection, Graph Traversal, Minimum Spanning Tree. ▪ Basic Programming Concepts using C/C++ ▪ Data Structures: Array, Stack, Queue, Linked List, Binary Tree, Heap, AVL Tree, B-tree. ▪ Computer Organization and Architecture: Number Representation, Computer Arithmetic, Instruction Set Architecture, Memory Organization, I/O Organization, ▪ Operating Systems: Memory Management, Processor Management, Device Management, File Systems. ▪ Database Management Systems: Relational Model, SQL, Functional Dependency, Normalisation (2NF, 3NF and BCNF). <p>Computer Networks: OSI, LAN Technology, MAC Protocols, WAN Technology - Circuit Switching, Packet Switching, Routing, Flow Control, Inter-networking, TCP/IP Networking including IPv4.</p>
4	<p style="text-align: center;">Department: Computer Science and Engineering Programme: Master of Computer Application (MCA)</p> <p>Logical Reasoning, Basic Mathematical Ability, Fundamentals of Computer Science, Fundamental programming concepts, English Vocabulary and composition.</p>
5	<p style="text-align: center;">Department: Design Programme: Master of Design (MDes)</p> <p>Visualization and spatial reasoning: Ability to visualise and transform 2D shapes and 3D objects and their spatial relationships.</p> <p>Practical and scientific knowledge: Know-how of scientific principles and everyday objects.</p> <p>Observation and design sensitivity: The capacity to detect concealed properties in daily life and think critically about them. Attention to detail, classification, analysis, inference, and prediction.</p> <p>Environment and society: General awareness of environmental, social and cultural connections with design.</p> <p>Analytical and logical reasoning: Ability to analyse qualitative and quantitative information.</p> <p>Language: Proficiency in reading and comprehending Standard English.</p> <p>Creativity: Grasp of verbal and non-verbal analogies, metaphors, signs, and symbols.</p> <p>Art and Design knowledge: Awareness about art/artefact/product, artists/designers, art/design history and trends.</p> <p>Design methods and practices: Knowledge of media, materials, production processes, and ergonomics</p>
6	<p style="text-align: center;">Department: Electronics and Communication Engineering Programme: MTech in Bioelectronics</p>
	<p>BE/BTech level courses in Electronics Engineering, Electrical Engineering, Instrumentation Engineering, Communication Engineering, Biomedical Engineering, Chemical Engineering, Bioengineering, Computer Science and Engineering, Biotechnology. M.Sc. level courses on Chemistry, Biophysics, Molecular Biology, Cell Biology and Molecular Biology and Biotechnology.</p>

7	Department: Electronics and Communication Engineering Programme: MTech in Electronics Design and Technology
	BE or equivalent level courses on Electronics and Communication Engineering, Electrical Engineering/ AMIE level courses in Electronics/Instrumentation Engineering.
8	Department: Electronics and Communication Engineering Programme: MTech in Semiconductor Technology

	<ol style="list-style-type: none"> 1. Semiconductor Physics and devices: Carrier Transport, Electrical conductivity of a semiconductor, PN junction Diodes, Optoelectronic devices, Zener diode, Tunnel diode, Gunn diode, IMPATT diode. 2. Digital circuits: Boolean algebra, Combinatorial Circuits, Sequential Circuits, Computer Organization, Data Converters, Semiconductor Memories, Microcontroller, and 8085/8086 Microprocessors. 3. Analog Electronic Circuits: PN junction Diode based devices: Bipolar Junction Transistor (BJT), and their biasing, Field Effect Transistor (FET), MOS capacitor, Op-AMP and its related circuits. 4. Network theory: Node and Mesh Analysis, Network theorems, Trigonometric and exponential Fourier series, Laplace transforms and properties, RC, RL, and RLC networks, resonant circuits, filters. 5. Basic VLSI design: MOS transistor models, Transistor as a switch. Inverter characteristics, Integrated Circuit Layout: Design Rules, combinational Circuit Design: CMOS logic families, Sequential Circuit Design, CMOS analog circuits. 6. Device modelling and MOSFET Charge Transport in Semiconductors, Two terminal devices, Bipolar junction transistors, FETs, Advanced FET modeling, Universal MESFET model, Universal HFET model, and BSIM MOSFET model. Introduction to SPICE modeling. 7. Electromagnetic theory: Plane Waves and Properties, Maxwell's Equations, Transmission Lines, Waveguide theory. 8. Electronic materials: Drude model, energy bands in crystals, density of states semiconductor; semiconductor devices, p-n junctions, LEDs and Laser diodes, photodetectors, transistors; electrical properties of polymers, ceramics, metal oxides, amorphous semiconductors; dielectric, and thermal properties of materials, Charge coupled devices, Compound semiconductors. 9. Digital signal processing: Fourier transform, Laplace transform, Discrete time signals, Design of FIR Digital filters, Application of DSP, FFT. 10. Analog and digital communication: Amplitude modulation, Frequency modulation, Phase modulation, Phase shift keying, Frequency shift keying, Amplitude shift keying, Inter symbol interference. 11. Instrumentation: Concept of instrumentation system, Classification of Transducers, Signal conditioning, ADC and DAC.
9	Department: Energy Programme: MTech in Energy Technology Energy sources and Energy conservation, Graduate level courses in Science and Engineering.
10	Department: Energy Programme: MTech in Solar Energy Engineering

	Energy sources and energy conservation, Graduate level courses in Science and Engineering
11	<p style="text-align: center;">Department: Food Engineering and Technology Programme: M Tech in Food Engineering and Technology</p> <p>Part-I: Mathematics and General Engineering (weightage: 20%)</p> <ul style="list-style-type: none"> • Mathematics at the level of BTech 1st and 2nd Semester • General Engineering: Thermodynamics; Fluid Mechanics; and Heat & Mass Transfer <p>Part-II: Food Engineering & Technology (weightage: 80%)</p> <p>Food Engineering; Food Chemistry & Nutrition; Food Microbiology; Food Product technology (As per the outline of GATE syllabus for Food Technology, copy attached)</p>
12	Department: Mechanical Engineering

Programme: MTech in Mechanical Engineering (Specialization: Machine Design; Thermo Fluids)

Engineering Mathematics

- Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors
- Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.
- Differential equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler- Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations.
- Complex variables: Analytic functions; Cauchy- Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.
- Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.
- Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi- step methods for differential equations.

Applied Mechanics and Design

- Engineering Mechanics: Free-body diagrams and equilibrium; friction and its applications including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations; Lagrange's equation.
- Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.
- Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope.
- Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts.
- Machine Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N

diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs.

Fluid Mechanics and Thermal Sciences

- Fluid Mechanics: Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings; basics of compressible fluid flow.
- Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy,

heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan- Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis

- thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics;
- thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

Applications:

- Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat.
- I.C. Engines: Air-standard Otto, Diesel and dual cycles.
- Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes.
- Turbomachinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines; steam and gas turbines.

Materials, Manufacturing, and Industrial Engineering

- Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.
- Casting, Forming and Joining Processes: Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design.
- Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding.
- Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming.
- Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; comparators; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in

manufacturing and assembly; concepts of coordinate- measuring machine (CMM).

- Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; additive manufacturing.
- Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing.
- Inventory Control: Deterministic models; safety stock
- inventory control systems.
- Operations Research: Linear programming, simplex method, transportation, assignment, network flow models, simple

	queuing models, PERT and CPM.
13	<p style="text-align: center;">Department: Mechanical Engineering Programme: MTech in Manufacturing Technology and Automation</p> <p>Engineering Mathematics</p> <ul style="list-style-type: none"> ▪ Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors ▪ Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems. ▪ Differential equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler- Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations. ▪ Complex variables: Analytic functions; Cauchy- Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series. ▪ Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions. ▪ Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi- step methods for differential equations. <p>Applied Mechanics and Design</p> <ul style="list-style-type: none"> ▪ Engineering Mechanics: Free-body diagrams and equilibrium; friction and its applications including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations; Lagrange's equation. ▪ Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength. ▪ Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope. ▪ Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration

isolation; resonance; critical speeds of shafts.

- **Machine Design:** Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs.

Fluid Mechanics and Thermal Sciences

- **Fluid Mechanics:** Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent

flow, flow through pipes, head losses in pipes, bends and fittings; basics of compressible fluid flow.

- Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan- Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis
- thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics
- thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations

Applications:

- Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat
- I.C. Engines: Air-standard Otto, Diesel and dual cycles
- Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes
- Turbomachinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines; steam and gas turbines

Materials, Manufacturing, and Industrial Engineering

- Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials
- Casting, Forming and Joining Processes: Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design
- Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding
- Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming
- Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; comparators; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in

manufacturing and assembly; concepts of coordinate- measuring machine (CMM)

- Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; additive manufacturing
 - Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing
 - Inventory Control: Deterministic models; safety stock
 - Inventory control systems
- Operations Research: Linear programming, simplex method, transportation, assignment, network flow models, simple

	queuing models, PERT and CPM
14	Department: Electrical Engineering Programme: M Tech in Electrical Engineering
	Same as the GATE 2025 syllabus of Electrical Engineering (EE)
15	Department: Assamese Programme: MA in Assamese
	<p>Assamese Literature</p> <ul style="list-style-type: none"> ▪ History of Assamese Literature (from beginning to present times) <p>Assamese Language and Script</p> <ul style="list-style-type: none"> • History of Assamese Language (From beginning to present times) • Evolution of Assamese Script • Dialectology and dialects of Assamese Language • Assamese Phonology and Morphology <p>Assamese Culture</p> <ul style="list-style-type: none"> • Assamese Folklore • Cultural History of Assam • Fairs and Festivals of Assam • Ethnic groups of Assam and their cultural contributions <p>Critical Theory (Eastern and Western)</p>
16	Department: Cultural Studies Programme: MA in Cultural Studies
	Issues related to Northeast India, History, Culture, Folklore, Society Performing Arts, Literature of NE India, Matters of Contemporary Importance, Film, Sports, Indian Literature, Indian Culture etc.
17	Department: Education Programme: MA in Education
	<ul style="list-style-type: none"> ▪ Philosophical Perspective in Education: Philosophy and Education, Idealism, Naturalism, Pragmatism, Educational Practices – Kindergarten, Montessori, Dalton Plan, Project Method etc. ▪ Sociological Perspective in Education: Education in relation to Society, Agencies of Socialization, Social Change, Social mobility and stratification etc. ▪ Psychological Perspective in Education: Educational Psychology and Theories, Learning, intelligence, personality, child’s growth and development etc. ▪ Educational Technology: Concept and scope of Educational Technology, Educational Communication, Emerging technologies in education- ICT in Education, Technology based learning, MOOCs, SWAYAM,

smart classroom etc.

- **Contemporary Issues in Education:** Educational scenario of India, Inclusive Education, RTE Act 2009, Education for peace, yoga and gender, Constitutional Provisions, Environmental Education etc.

18

Department: Education
Programme: BEd

- General Awareness-Current affairs, important facts, politics, education, geography, economics etc.
Teaching Aptitude-Teaching-Learning, Teacher's role, Classroom communication etc.

	<ul style="list-style-type: none"> • Contemporary Issues in Education- Educational scenario of India, Inclusive Education, RTE Act 2009, Education for peace, yoga and gender, Constitutional Provisions, Environmental Education etc. • ICT in Education- Online Learning Platforms, Massive Open and Online Courses, classroom communication, teaching learning aids, educational technology, Web 2.0 Technologies etc. • Perspectives in Education-Philosophical, Sociological and Psychological.
19	<p style="text-align: center;">Department: Education Programme: MEd</p> <ul style="list-style-type: none"> • Meaning, Nature, Aims, Modes of Education, Functions and Philosophies of education and their educational implications, Naturalism, Idealism, Pragmatism, Existentialism, Educational Thinkers • Indian Society , Education and relationship with Indian Social Structure, Social Demand for Education, Democracy and culture and education • Nature, Meaning and functions of Educational Psychology, Behaviourism, Cognitivism Motivation, Learning and its theories, Trial and Error, Classical Conditioning, Operant conditioning, Gestalt, Constructivist Approach, Piaget and Vyogotsky’s theories • Intelligence and its theories, Personality and its theories, Maslow’s hierarchy of needs and their educational implication • Inclusive education, Integrated education, Concept & Functions of Educational Management, Planning, Organizing, Control, Direction and Financing, School as a unit of decentralization planning. Modern Management Techniques: Case study, Manpower surveys EMIS • Guidance and Counseling, its types and its Phases, Qualities of an Effective Counsellor • Elementary Education in India, UEE, DPEP, SSA, RTE, 2009, Women Education, Education of Weaker Section, Education of CWSEN • Teaching Process: Concept, Characteristics & Functions of teaching, Principles & Maxims of teaching, Techniques of Teacher-Preparation: Microteaching, Simulated Teaching, Teaching Role Play Programmed learning, Learning - Principles
20	<p style="text-align: center;">Department: English Programme: MA in English</p> <ul style="list-style-type: none"> ▪ BA Honours/Major level syllabi taught in Indian universities - Reading Literature (Genres, Movements, Schools, Terms), History of English Literature, English Poetry: Chaucer to Dryden, British Drama: Beginning to Shakespeare, Fiction: Early English Novels, English Poetry: The Augustans and the Romantics, Literary Theory and Criticism, Drama: Jacobean to Eighteenth Century, Fiction: Victorian and Modern, Poetry: Victorian to Modern, The English Essay, English Non-fictional Prose, Drama: Nineteenth and Twentieth Century, English for Communication, Phonetics of English and ELT, Postcolonial Literature

	<ul style="list-style-type: none"> English grammar, composition, comprehension, vocabulary, phrases and idioms, current affairs, great authors, books, prizes
21	<p style="text-align: center;">Department: Linguistics and Language Technology Programme: MA in Linguistics and Language Technology</p> <p>Basic grammar (syntax, morphology, phonetics, semantics), language and animal communication, English grammar (+12 level), sociolinguistics, language and society, bilingualism, multilingualism, languages and linguistic situation of Northeast, scheduled languages and non-scheduled languages, language endangerment, language policies and planning.</p>
22	Department: Hindi

	Programme: MA in Hindi
	हडिंदी व्याकरण, हडिंदी भाषा, हडिंदी साहसत्य का इहतसस, भारतीय और पाश्रात्य काव्यशास्त्र, हडिंदी आलौचना, समकालीन हडिंदी साहसत्य, हडिंदी की साहसत्यक पत्रकाररता
23	Department: Hindi Programme: Master of Translation Studies
	हडिंदी व्याकरण, अडग्रेजी व्याकरण, अनुवाद का सेदससहतक और व्यावसरक ज्ञान, राजभाषा हडिंदी की सिंवैधाहनक स्थित, हडिंदी-अडग्रेजी अनुवाद हवषयक तकनीकी सिंसाधनोसिं का ज्ञान, अनुवाद हवषयक सिंससिंनोसिं की जानकारी, अनुवाद की उपयोहिता और मसत्व, हडिंदी-अडग्रेजी अनूहदत साहसत्य का ज्ञान
24	Department: Law Programme: Master of Laws (LLM)
	Constitutional Law: Preamble, Salient features of the Indian Constitution, Citizenship, Fundamental Rights, Writ Jurisdiction, Directive Principles of State Policy and Fundamental Duties, Judiciary, Executive, Parliament and State Legislatures, Amending Process of the Constitution, Union State Relationship and Emergency Provisions Jurisprudence: Nature and Sources of Law, Schools and Concepts of Jurisprudence Law of Crimes: Fundamental elements of crime, stages of crime, general explanations and exceptions, abetment, conspiracy and attempt, punishments, offences against state, offences affecting common well-being, offences affecting the human body, offences against property, offences relating to marriage and offences affecting reputation Family Law: Concepts in Family Law, Sources of Family Law in India, Marriage and Dissolution of Marriage, Adoption and Guardianship, Succession, Maintenance, Matrimonial Remedies and Uniform Civil Code Public International Law and Human Rights: Nature and definition of international law, Sources of International Law, Relationship between international law and municipal law, State recognition and state succession, Treaties: Formation, application, termination and reservation, UNO and its organs, Concept and Development of Human Rights, International Bill of Human Rights and Implementation of Human Rights in India Current Legal Affairs
25	Department: Mass Communication and Journalism Programme: MA in Mass Communication and Journalism
	English language and grammar, Current affairs, General knowledge, a basic level of awareness about various aspects of mass media at national and international level for objective type questions. Observational, analytical, and creative writing skills for descriptive questions.
26	Department: Social Work Programme: MA in Social Work

Current affairs, Logical Reasoning, Awareness on Social welfare schemes, Social Reform movements, Contemporary Social Issues, Rights Based Issues, Quantitative aptitude, Indian Constitution, Basic Concepts in Social Work, Social Legislations, Human Resource Management, English Language Proficiency, Basic Concepts in Social Science (Sociology, Economics, Political Science, Psychology, Research Methods in Social Sciences, Issues in Northeast India, Environmental and Ecological Issues

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Department: Sociology
Programme: MA in
Sociology

	<p>Sociology - Concepts and Principles: Definition and Emergence, Basic Concepts, Basic understanding of the works of Marx, Weber, Tonnies, Durkheim, Parsons and Merton, Basic kinship terminologies</p> <p>Indian Society: Basic Concepts: Caste, Varna, village, region, religion, Processes of Social Change: Sanskritisation, Westernisation, Modernisation, Development and Change, Nation, Nationalism, and nation Building</p> <p>Northeast India: Basic understanding of the Region: Geography, Economy, Poli- ty, Society, Language and Culture, Ethnicity, and Identity Politics</p> <p>General Awareness: National and International: Current Affairs, Basic knowledge of culture, politics, geography, history and science, Basic information about the Indian Constitution</p>
28	<p style="text-align: center;">Centre: Chandrabhabha Saikiani Centre for Women Studies Programme: MA in Women Studies</p> <ul style="list-style-type: none"> • Women Laws • Policies and Schemes related to Women • Women's History • Computer Knowledge • General Knowledge
29	<p style="text-align: center;">Department: Business Administration Programme: Master of Tourism and Travel Management (MTTM)</p> <ul style="list-style-type: none"> • General Knowledge - Tourism destinations of Northeast India, India and the world • History and mythology of Northeast India and India. • Current Affairs • English - English Grammar; Sentence formation • Reasoning
30	<p style="text-align: center;">Department: Commerce Programme: M.Com</p> <p>Accounting and Financial Management, Economics, Business Mathematics and Statistics, Banking, Insurance, Taxation, Management, Business Laws, General Business Awareness</p>
31	<p style="text-align: center;">Department: Chemical Sciences Programme: MSc in Chemistry</p> <p>Inorganic Chemistry, Quantum Chemistry & Chemical Bonding, Organic Chemistry, Physical Chemistry, Spectroscopy from Undergraduate level curriculum of all leading Indian Universities</p>
32	<p style="text-align: center;">Department: Environmental Science Programme: MSc in Environmental Science</p>

	Botany, Zoology, Agriculture, Physics, Chemistry, Mathematics, Statistics, Earth and Environmental Science from Undergraduate level curriculum of Indian Universities
33	<p style="text-align: center;">Department: Mathematical Sciences Programme: MSc in Mathematics</p> <p>Classical Algebra; Calculus; Coordinate Geometry; Vectors; Differential Equations; Mechanics; Real Analysis;; Abstract Algebra; Numerical Methods; Linear Algebra; Linear Programming; Topology and Functional Analysis; Number Theory; Complex Analysis</p>

34	Department: Physics Programme: MSc in Physics
	BSc level syllabus of any Indian University (Classical Mechanics, Properties of matter, Quantum Mechanics, Atomic Physics, Solid State Physics, Nuclear Physics, Mathematical Physics, Thermodynamics and Statistical Physics, Electricity and Magnetism, Electronics)

Ph.D. Programmes

Sl. No.	Programme Name
1	Programme: PhD in Assamese
	History of Assamese Literature; History of Assamese Language and Script; Culture of Assam; Literary Theory and Criticism (Eastern and Western); Research Methodology
2	Programme: PhD in Cultural Studies
	Cultures in contemporary and historical perspectives; Cultural Studies as a discipline; Cultural Memory, Cultural History, Oral History; Contemporary Ethnography, Material Cultures, Media and Culture, Digital Archiving, Visual Culture, Gender Studies, Folk and Literary Cultures, Culture and Environment, Research Methods
3	Programme: PhD in Education
	Research Methodology in Education- Concept of Educational Research, Methods of Research, Approaches of Research, Hypothesis, Synopsis, Sample-population, Designs of Research, Descriptive and Interferential Statistics, Research Report, Bibliography Etc. Contemporary issues in Education- Educational scenario of India, Inclusive Education, RTE Act 2009, and Education for peace, yoga and gender, Constitutional Provisions, Environmental Education etc. Perspectives in Education- Philosophical, Sociological and Psychological foundation of Education
	Programme: PhD in English

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Div -I: English Language Teaching

English in the global context, ELT in India in historical perspective. Principles and practice of ELT - Language acquisition, language learning- theories, principles; Language skills; Language teaching-different approaches (methods, techniques, procedures); Teaching of literature; Evaluation, testing. Syllabus designing and material production. English for Specific/Academic Purpose.

Div -II: American Literature

Research Methodology, Literary Theory and Criticism, American

Literature Div -III: Indian Literature

Research Methodology, Literary Theory and Criticism, Indian Writing in

English Div -IV: Gender and Literature

Research Methodology, Literary Theory and Criticism, Gender and

Literature Div V: Life Writing, Travel Writing

Research Methodology, Literary Theory and Criticism, Life Writing, Travel

Writing Div VI; Film Adaption, Popular Culture

Research Methodology, Literary Theory and Criticism, Life Writing, Travel Writing

	Div VII: Anglophone South Asian Literature, Ecocriticism Research Methodology, Literary Theory and Criticism, Life Writing, Travel Writing
5	Programme: PhD in Hindi हडिंडी भाषा की उत्पत्ति और हवकास, हडिंडी भाषा की सिंरचना, भाषा हवज्ञान, हडिंडी साहडत्य का इहतडास, हडिंडी आलोचना, अनुवाद हवज्ञान, हडिंडी पत्रकाररता, लोक साहडत्य, तुलनात्मक साहडत्य, भारतीय काव्यशास्त्र, पाश्चात्य काव्यशास्त्र, राजभाषा हडिंडी, समकालीन हडिंडी साहडत्य, हडिंडी हसनेमा, शोध प्रहवहध और शोध दृहि
6	Programme: PhD in Linguistics and Language Technology Modern Linguistic theories (formal and functional, especially, Chomsky's generative theory, Cognitive Linguistics, Construction Grammar); Morphology; Phonetics and Phonology; Semantics and Pragmatics; Philosophy of Language (e.g. ordinary language philosophy; logical positivism); Sociolinguistics (e.g. bilingualism, multilingualism, politeness; Critical Discourse Analysis), Languages and linguistic situation of Northeast, Scheduled languages and non-scheduled languages, Language endangerment, Language policies and planning.
7	Programme: PhD in Mass Communication and Journalism Research methodology for social sciences, theoretical concepts of communication and media, a higher level of critical awareness about various important issues of mass media at national and international level.
8	Programme: PhD in Social Work <ul style="list-style-type: none"> • Social Work • Social work and allied social science theories • Social science research and statistics • General knowledge and aptitudes • Developmental issues • Civil society issues
9	Programme: PhD in Sociology Research Methodology: Philosophy, science and research, Theory and field, Social research strategies, Research designs and sample designs, Planning a research project and formulating research questions, Reviewing the literature, Ethics in social science research, Nature of quantitative research, Nature of qualitative research, Participant observation and ethnography, Triangulation: mixed methods research, Problem of objectivity and subjectivity. Sociological Theory: Classical sociological traditions: Marx, Durkheim, Weber, Approaches to social reality: Positivism, Hermeneutics, Post- structuralism, Post- modernism, Functionalism and its critiques, Neo- functionalism, Structuralism, Social structure as model, Structuration, Critical theory and Frankfurt School, Symbolic Interactionism, Phenomenology, Ethnomethodology, Dramaturgy. Indian Society: Theories of Social Change in India, Caste, Varna and Class, Kinship systems, Secularism and Communalism, Nationalism, Nation Building, Regionalism.

10	Programme: PhD in Women Studies
	Women's history, feminist research methodology, women and development, women and health
11	Programme: PhD in Business Administration
	General Awareness: National and international economic environment, conceptual background and applications in economic theory. (20)

	<p>General English: Basic English grammar (20)</p> <p>General Reasoning: Basic arithmetic and mathematics, Quantitative and alphabetic reasoning, pictorial reasoning. (20)</p> <p>Research Methodology: Basic statistical tools: Measures of Central Tendency, Measures of Dispersion; Correlation; Index Numbers; Time series analysis; Sources of Data: Primary and Secondary sources, Observation and Self-reported data; Basics of Sampling: Sample Vs. Census; Probabilistic Sampling Techniques, Non-Probabilistic Sampling Techniques; Scales of Measurement' Validity and reliability; Basics of Hypothesis Testing: Null and alternative hypothesis; Basic hypothesis testing tools: Chi square test, z test, t test, Analysis of Variance; Style of Referencing: American Psychological Association (APA) 7th Edition style.(40)</p>
12	<p style="text-align: center;">Programme: PhD in Commerce</p> <ul style="list-style-type: none"> • Research Methodology • Accounting (PG and NET Standard) • Finance (PG and NET Standard) • Economics (including Indian Economy)
13	<p style="text-align: center;">Programme: PhD in Chemical Sciences / PhD in Applied Chemistry</p> <p>Organic Chemistry, Inorganic Chemistry, Physical and Quantum Chemistry, Polymer Chemistry, Analytical Chemistry, Spectroscopy, Interdisciplinary topics from post graduate level curriculum of all leading Indian Universities.</p>
14	<p style="text-align: center;">Programme: PhD in Environmental Science</p> <p>Earth and Environmental Science, Mathematics, Statistics, Physics, Chemistry, Botany, Zoology, and Agriculture, from master's level curriculum of Indian Universities.</p>
15	<p style="text-align: center;">Programme: PhD in Mathematical Sciences/ PhD in Applied Mathematics</p> <p>Linear Algebra, Abstract Algebra, Real Analysis, Complex Analysis, Functional Analysis, Topology, Ordinary and Partial Differential Equations, Numerical Analysis, Measure Theory, Classical Mechanics, Probability and Statistics, Mathematical Programming, Number Theory, Special Functions, Integral Equations and Transforms, Calculus of Variation.</p>
16	<p style="text-align: center;">Programme: PhD in Molecular Biology & Biotechnology</p> <p>Master (MSc/MTech)/BSc (Graduation) level Life Science (includes Botany, Zoology, Microbiology, Biochemistry, Cell Biology, Physiology, Genetics etc.), basic bioinformatics, and Higher Secondary level Physics, Chemistry and Mathematics.</p>
17	<p style="text-align: center;">Programme: PhD in Physics / PhD in Applied Physics</p> <p>MSc Physics syllabus of any Indian University (Quantum Mechanics, Classical Mechanics, Mathematical Physics, Condensed matter Physics, Statistical Physics, Atomic and Molecular Physics, Nuclear and Particle Physics, Astrophysics, Electrodynamics, Electronics)</p>
	Programme: PhD in Civil Engineering

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Soil formation, Soil structure, Soil properties, Permeability and seepage, Stress distribution in soils, Compaction, Consolidation, Shear strength, Soil exploration & site investigation, Shallow foundations, Deep Foundations, Ground improvement techniques, Lateral earth pressure, Stability of slope, Introduction to soil dynamics & machine foundation, Liquefaction of soils, Pavement material.

Water and Wastewater Quantity Estimation, Water Quality, Microbiology, Environmental Chemistry, Dissolved oxygen Model, Sewer Design, Type I and II suspensions, Sedimentation Tanks, Coagulation and Flocculation, Hydraulics of Filtration,

	<p>Disinfection Methods, Ion exchange and Adsorption, Water Softening, Manganese and Iron Removal, Wastewater treatment, Septic tank, wastewater stabilization ponds, aerated ponds and oxidation ditches.</p> <p>Fluid properties, Application of the continuity, momentum and energy equations, Flow in pipes, Boundary Layer theory, forces on submerged bodies, hydrostatic forces on bodies, buoyancy, kinematics of flow, dynamics of fluid flow, Dimensional analysis; flow in open channel, hydraulic machines, Hydrologic cycle, precipitation and abstraction losses, hydrograph analysis, flood estimation, groundwater hydrology –well hydraulics, aquifers, Darcy’s Law, irrigation systems and methods, Gravity Dams and Spillways</p> <p>Pavement materials, Pavement analysis and design, Highway construction and maintenance, Bituminous mix design</p>
19	<p align="center">Programme: PhD in Computer Science & Engineering</p> <p>Discrete Mathematics, probability, statistics, algebra Data structures-Array, stack, queue, linked list, binary tree, heap, AVL tree, graph. Programming languages- C, C++. Design and analysis of algorithms-Asymptotic notation, sorting, selection, searching. Computer organization and architecture – Number representation, computer arithmetic, Logic Design, Boolean algebra, memory organization, I/O Organization. Operating systems - Memory management, processor management, critical section problem, deadlocks. Formal languages and automata theory - Finite automata and regular expressions, push down automata, context-free grammars, Turing machines, elements of undecidability. Database management systems - Relational model, relational algebra, relational calculus, functional dependency, normalization (up to BCNF). Computer networks – Physical layer, LAN technology, MAC protocols, circuit switching, packet switching, data encoding, routing, flow control, error detection/correction, Internetworking, TCP/IP networking protocols. Principles of Compiler Construction-Lexical analyzer, parser, syntax-directed translation, intermediate code generation.</p>
	<p>Programme: PhD in Design</p>

Section I :

Visualization and spatial ability: Pictorial and diagrammatic questions to test the understanding of transformation and/or manipulation of 2D shapes and 3D objects and their spatial relationships.

Environmental and social awareness: General awareness of environmental factors (such as climate, population, water, vegetation, pollution, weather, natural resources) and their implications on the design of products, images, infrastructure, and environment. Awareness of design terminologies, social and cultural connection with design, history of the designed artefact, and socially responsible and environmentally sustainable design responses. History of art, sculpture, and literature. Analytical and logical reasoning: Ability to analyse given information logically and select the most appropriate solutions; ability to weigh opinions, arguments, or solutions against appropriate criteria; ability to use logic and structured thinking to deduce from a short passage, which of a number of statements is the most accurate response to a posed question.

Language and creativity: Ability to understand passages in commonly used English language; ability to think creatively in terms of alternatives; ability to distinguish innovative options and think out-of-the-box.

Design thinking and problem solving: Ability to understand the context, the users and the constraints and select the most appropriate solution for a given design problem.

	<p>Observation and design sensitivity: Ability to detect concealed properties in day-to-day life and think critically about them. Ability to discern subtle differences in visual properties and aesthetic outcomes.</p> <p>Section II: Product Design: Product life cycle and stages. Design Toolkits, Design selection and concept development: intuitive and directed methods. Product architecture and its types, importance of aesthetic and usability. Prototyping -Tools, materials, and techniques.</p> <p>Ergonomics: Overview, objective, and application. MME interaction; Human Factors and its fundamentals, mutual task comfort. Anthropometry - Human body, various postures, and movements, measuring techniques; Biomechanics and its applications. Design Research Methodologies: Design Research Strategies, Methodologies, Techniques and Procedures. Systematic literature review; Interviews: types & techniques; Questionnaires; Observation techniques; Participatory methods; Cognitive Task Analysis; Mental model elicitation; Contextual inquiry; Needs assessment; Thematic analysis; Think-aloud technique.</p>
21	<p style="text-align: center;">Programme: PhD in Electrical Engineering</p> <p>Verbal Aptitude: Basic English grammar: tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: words, idioms, and phrases in context Reading and comprehension Narrative sequencing.</p> <p>Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing the data), 2-and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series Mensuration and geometry Elementary statistics and probability.</p> <p>Analytical Aptitude: Logic: deduction and induction, Analogy, Numerical relations, and reasoning.</p> <p>Spatial Aptitude: Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions</p> <p>General & Engineering Mathematics: Linear Algebra, Calculus, Differential Equations, Linear Equation, Quadratic Equations, Complex Variables, Geometry, Probability and Statistics</p> <p>Basic Electrical & Electronics Engineering: D.C. & AC Circuit Analysis: Independent and Dependent sources, Nodal and Mesh circuit analysis, Source equivalence and conversion, Superposition, Thevenin, Norton, Maximum Power Transfer and Reciprocity</p>

theorems. AC fundamentals and Circuits: A.C. generation, waveforms, R-L, R-C and R-L-C circuits, Single Phase and Three-phase circuit analysis: Star and Delta connected Systems, voltages, current and power in 3-phase circuits. Ammeter, voltmeter, Wattmeter.
Semiconductor, diodes, rectifier clipper, clamper. Transistor: BJT, MOSFET. OPAMP: Differentiator, Integrator, SCR

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Programme: PhD in Electronics & Communication Engineering

Section 1: Engineering Mathematics:

Linear Algebra: Vector space, basis, linear dependence and independence, matrix algebra, eigenvalues and eigenvectors, rank, solution of linear equations- existence and uniqueness
Calculus: Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partial derivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.
Differential Equations: First order equations (linear and nonlinear), higher order linear differential equations, Cauchy's and

Euler's equations, methods of solution using variation of parameters, complementary function and particular integral, partial differential equations, variable separable method, initial and boundary value problems.

Vector Analysis: Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stokes' theorems.

Complex Analysis: Analytic functions, Cauchy's integral theorem, Cauchy's integral formula, sequences, series, convergence tests, Taylor and Laurent series, residue theorem

Probability and Statistics: Mean, median, mode, standard deviation, combinatorial probability, probability distributions, binomial distribution, Poisson distribution, exponential distribution, normal distribution, joint and conditional probability.

Section 2: Networks, Signals and Systems

Circuit analysis: Node and mesh analysis, superposition, Thevenin's theorem, Norton's theorem, reciprocity. Sinusoidal steady state analysis: phasors, complex power, maximum power transfer. Time and frequency domain analysis of linear circuits: RL, RC and RLC circuits, solution of network equations using Laplace transform. Linear 2-port network parameters, wye-delta transformation. Continuous-time signals: Fourier series and Fourier transform, sampling theorem and applications. Discrete-time signals: DTFT, DFT, z-transform, discrete-time processing of continuous-time signals. LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeroes, frequency response, group delay, phase delay.

Section 3: Electronic Devices:

Energy bands in intrinsic and extrinsic semiconductors, equilibrium carrier concentration, direct and indirect band-gap semiconductors. Carrier transport: diffusion current, drift current, mobility and resistivity, generation and recombination of carriers, Poisson and continuity equations. P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell.

Section 4: Analog Circuits:

Diode circuits: clipping, clamping and rectifiers, BJT and MOSFET amplifiers: biasing, ac coupling, small signal analysis, frequency response. Current mirrors and differential amplifiers. Op-amp circuits: Amplifiers, summers, differentiators, integrators, active filters, Schmitt triggers and oscillators.

Section 5: Digital Circuits and Microprocessor:

Number representations: binary, integer and floating-point- numbers. Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders, Sequential circuits: latches and flip-flops, counters, shift- registers, finite state machines, propagation delay, setup and hold time, critical path delay. Data converters: sample and hold circuits, ADCs and DACs. Semiconductor memories: ROM, SRAM, DRAM.

8085 Microprocessor: Programmers model, register structure, addressing modes and assembly languages, Interrupts. Peripherals: Programmable interrupt controller (8259), programmable peripheral interface (8255), serial communication (8251), programmable timer and event counter (8254) and DMA controller (8257)

Section 6: Control Systems:

Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag lead compensation; State variable model and solution of state equation of LTI systems.

Section 7: Communications and microwave:

Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems. Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers. Information theory: entropy, mutual information and channel capacity theorem. Digital communications: PCM, DPCM, digital modulation schemes (ASK, PSK, FSK, QAM), bandwidth, inter-symbol interference, MAP, ML detection, matched filter receiver, SNR and BER. Fundamentals of error correction, Hamming codes, CRC.

Passive Microwave Devices and Components - Reciprocal and nonreciprocal devices and their applications. Guided and Free Space Propagation. Active Microwave Devices - Tubes and Solid State Devices, their principles and applications. Measurement Systems and Measurement Techniques. Microwave Materials and their Properties

Section 8: Electromagnetics:

Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector. Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth. Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart. Rectangular and circular waveguides, light propagation in optical fibres, dipole and monopole antennas, linear antenna arrays.

Section 9: Electrical Machines:

Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency; Three-phase transformers: connections, vector groups, parallel operation; Auto-transformer, Electromechanical energy conversion principles; DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, speed control of dc motors; Three-phase induction machines: principle of operation, types, performance, torque-speed characteristics, no-load and blocked-rotor tests, equivalent circuit, starting and speed control; Operating principle of single-phase induction motors; Synchronous machines: cylindrical and salient pole machines, performance and characteristics, regulation and parallel operation of generators, starting of synchronous motors; Types of losses and efficiency calculations of electric machines

Section 10: Power Electronics

Static V-I characteristics and firing/gating circuits for Thyristor, MOSFET, IGBT; DC to DC conversion: Buck, Boost and Buck- Boost Converters; Single and three-phase configuration of uncontrolled rectifiers; Voltage and Current commutated Thyristor based converters; Bidirectional ac to dc voltage source converters; Magnitude and Phase of line current harmonics for uncontrolled and thyristor based converters; Power factor and Distortion Factor of ac to dc converters; Single-phase and three-phase voltage and current source inverters, sinusoidal pulse width modulation.

Section 11: Sensors and Bioinstrumentation:

Sensors – resistive, capacitive, inductive, piezoelectric, Hall effect, electrochemical, optical; Sensor signal conditioning circuits; application of LASER in sensing and therapy. Origin of biopotentials and their measurement techniques– ECG, EEG, EMG, ERG, EOG, GSR, PCG, Principles of measuring blood pressure, body temperature, volume and flow in arteries, veins and tissues, respiratory measurements and cardiac output measurement. Operating principle of medical equipment - sphygmomanometer, ventilator, cardiac pacemaker, defibrillator, pulse oximeter, hemodialyzer; Electrical Isolation (optical and electrical) and Safety of Biomedical Instruments.

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Programme: PhD in Energy

Energy conversion and Energy Systems, Energy-Environment interaction, Instrumentation and control, Electrical energy systems

24	<p style="text-align: center;">Programme: PhD in Food Engineering & Technology</p> <p>Food Engineering; Food Chemistry & Nutrition; Food Microbiology; Food Product technology (As per the outline of GATE syllabus for Food Technology)</p>
25	<p style="text-align: center;">Programme: PhD in Mechanical Engineering</p> <p>Mathematics: Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors. Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; Fourier series; gradient, divergence and curl, directional derivatives, applications of Gauss, Stokes and Green's theorems. Differential equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; initial and boundary value problems. Applied Mechanics and Design: Engineering Mechanics: Free-body diagrams and equilibrium; friction and its applications including rolling friction, kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations. Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts. Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses. Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance. Machine Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings. Fluid Mechanics and Thermal Sciences: Fluid Mechanics: Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, flow through pipes. Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance heat transfer through fins; lumped parameter system, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan-Boltzmann law. Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; Zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic</p>

relations.

Applications:

Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat.

I.C. Engines: Refrigeration and air-conditioning.

Turbomachinery: Impulse and reaction principles, Pelton-wheel, Francis and Kaplan turbines; steam and gas turbines. Materials and Manufacturing Engineering

Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

	<p>Casting, Forming and Joining Processes: Different types of castings, solidification and cooling; plastic deformation and yield criteria; fundamentals of hot and cold working processes; Principles of welding, brazing, soldering and adhesive bonding.</p> <p>Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; tool life and wear; Metrology and Inspection: Limits, fits and tolerances.</p>
26	<p style="text-align: center;">Programme: PhD in Multi-Disciplinary Research</p> <p>General aptitude in research as evidenced by comprehensive knowledge on issues related to scientific thinking, research ethics (Good Academic Research Practices), sustainability, development, economy, technology, environment, peace, conflict, and harmony.</p> <p>Comprehensive understanding of programmes and policies of Government of India related to welfare and development, food security, access to education including provisions of NEP2020.</p> <p>Basic understanding of major challenges faced by mankind including global, national, and regional initiatives to combat such challenges (for example, not limited to, modern lifestyle vis-à-vis mental health, exploitation of natural resources vis-à-vis climate change) including SDG and Net Zero targeting.</p> <p>Fundamental knowledge in mathematics, science, statistics, history, creative arts subjects and geography.</p> <p>Working knowledge on ethical use of ICT, and of Language and communication, basic understanding on education as a mean of attaining higher order thinking skills and a driver of self-directed learning.</p>
27	<p style="text-align: center;">Programme: PhD in Law</p>
	<p>Research Methodology, Jurisprudence, Constitutional Law, Criminal Law, Public International Law, Human Rights Law, Family Law, Current Legal Affairs</p>