# M.Tech (Online) Degree Programme for Working Professionals

## Information Brochure 2025

# M.Tech. (Online) Degree Programme for Sponsored Candidates

In the spirit of India's National Education Policy (NEP 2020), the Indian Institute of Science (IISc), Bengaluru, launched the Master of Technology (Online) degree in 2021 as a fully-online programme, for practicing technologists, engineers and scientists. The programme is designed for professionals who already have a BE, BTech or equivalent degree and wish to upskill or re-skill. This is a sponsored program, where organisations having an MoA with IISc may nominate their employees.

The following streams are open for admission in the academic year 2025-26:

- Artificial Intelligence
- Data Science and Business Analytics
- Electronics and Communication Engineering

The programme may expand to other streams in the next few years.

All classes and content are delivered online, during evenings and weekends. Students must attend the live lectures synchronously. Recordings and course content are made available on our Moodle LMS platform. Assessments will be based on online examinations and evaluations, unless noted otherwise. All courses and lectures are handled by IISc faculty.

The degree requirements are fulfilled through a credit-system. Students complete 64 credits of course and project work. Each course is typically for 4 credits, indicating 3 contact-hours of live lectures and 1 hour of lab/tutorial, per week. Students need to complete 3-4 mandatory courses, 5-6 elective courses, and about 32 project credits, depending on the stream. Elective courses may be taken from any of the ~30 courses offered in online mode. The project is done over a 9-12 month period in-house, within the parent organisation with a company guide, while IISc faculty serve as mentors. The programme is self-paced. The nominal duration for completion is 3 years, but students may finish the degree in 2-4 years.

The M.Tech.(Online) degree you will earn is equivalent to our full-time Master of Technology (M.Tech.) degree in all respects: number of credits, project work, rigor and the quality of the courses. The term "Online" in the name of the degree refers to the *means* by which the academic instruction happens. Students who complete this degree are eligible to apply for a Ph.D. programme.

This programme is available only in a sponsored mode for employees of organisations and not offered directly offered to individuals. Organisations interested in nominating their full-time employees to the programme may enter into a Memorandum of Agreement (MoA) with IISc. Nominated candidates must fulfil the eligibility criteria for a stream, and take an online written/programming test conducted by IISc for the stream(s) they apply to. Candidates who clear the admissions test may be sponsored for admission.

Over 350 students from 25 companies are enrolled in the M.Tech.(Online) programme over three years. Over 80% of students from 2021 batch and 50% of students from 2022 batch have graduated in under 2.5 years, with the rest completing this year. The programme has a 90% retention rate of students.

**Fee Structure**

- About 8.8–10 lakhs, depending on the stream and credits taken, for the full duration of the programme. The fee is paid progressively during each semester. The students pay the course fee and may be reimbursed internally by their sponsoring organisation.

For more information, please visit the **Admissions 2025 website**, the I-KEN website **https://cce.iisc.ac.in/iken/mtech-online/** or Email **office.iken@iisc.ac.in**.

**About IISc**

► **Best University in India** since the inception of NIRF Rankings in 2016. ► One of 12 institutions in India to be granted the **Institute of Eminence (IoE) status.** ► **Highest-ranked Indian University** in the **THE World University Rankings, 2024.** ► Ranked in the **top 200 Global Universities and #1 in the world on Citation per Faculty** as per the **QS World University Rankings, 2023.**

# Admissions & Eligibility

- Applicants must be **nominated** by an organization having a MoA with IISc for the M.Tech.(Online) Degree Programme. Self-nominations are not allowed.
    - *Please contact office.iken@iisc.ac.in if your organisation would like to join this program!*
- All applicants should have a **four-year BE, BTech or equivalent degree**. The **Minimum CGPA/percentage** in all degrees and specific streams requirements are given below.
- The employees should have a minimum **two years of industry experience** at the time of joining the programme (1st August of the academic year).
- All applicants should also have strong training in **mathematics and programming**.
- The admissions test will be at the **under-graduate level** and focus on your understanding the fundamentals. **Syllabus and sample papers** and are available on the IKEN website.

## Additional Stream-specific Eligibility Criteria

| Stream | Prior Degree | Minimum Score/CGPA | Selection Process |
|---|---|---|---|
| **Artificial Intelligence** | BE/BTech/BS(4yrs), in CS/ECE/EE or an equivalent discipline | At least 70% or equivalent in all degrees | Online test |
| **Data Science and Business Analytics** | BE/BTech/BS(4yrs) or an Equivalent 4-year degree/diploma after 12th standard (or) a Masters' degree, in any discipline | At least 60% or equivalent in all degrees | Online test |
| **Electronics and Communication Engineering** | BE/BTech/BS(4yrs), in ECE/EE or an equivalent discipline | At least 60% or equivalent in all degrees | Online test |

## Tentative Schedule for 2025 Academic Year (Starting 1st August 2025)

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|---|---|
| Applications Portal Opens | **14 March, 2025** |
| Applications Portal Closes | **01 April, 2025** |
| Online Written Test & Interviews | **04 - 05 May, 2025** |
| Offer of Admission to Selected Candidates | **15 June, 2025** |
| Payment of Fees & Deposit by Selected Candidates | **15 July, 2025** |
| Classes Start for Academic Year | **1 August, 2025** |

# Artificial Intelligence (AI)

The Master of Technology (Online) programme in Artificial Intelligence is offered by the Division of Electrical, Electronics, and Computer Sciences (EECS) at IISc. The vision of the programme is to impart rigorous training in the foundations and deep technology of Artificial Intelligence to early-career professionals with 2-8 years of experience to upskill them to become technology and business leaders in information-driven enterprises. These learnings are coupled with a unique in-house project that applies the learnings to a hands-on project relevant to the industry. Faculty from the Division of EECS, the Department of Computational Data Sciences (CDS), and the Robert Bosch Centre for Cyber-Physical Systems (RBCCPS) will offer contemporary courses in AI through online lectures and tutorials, and will provide high-level mentorship on capstone projects. More details at AI Stream website.

## Program Structure

- **Core courses (16 credits):** These are typically taken in the first and second semesters.
    - Random Processes (4 credits)
    - Linear Algebra (4 credits)
    - Linear and Non-linear Optimization (4 credits)
    - Machine Learning (4 credits)
- **Sample elective courses (20 credits or more):** Sample electives are shown below. Students may take elective courses from *any of the three streams*. These are the minimum number of elective credits. More may be taken as well with permission from your organization.
    - Data Analytics
    - Reinforcement Learning
    - Data Structures and Graph Analytics
    - Edge and Cloud Systems for Machine Learning Algorithms
    - Deep Generative Models
    - Introduction to Cryptography
    - Deep Learning for Robotics
- **Project (28 credits):** Students can start this three-term project for 28 credits after successfully completing all the core courses. Students will complete 4 project credits in the 1st term to identify the topic, 12 credits in the 2nd term followed by a midterm evaluation, and the remaining 12 project credits in the 3rd term for the final evaluation. Student will propose the topic in consultation with their Guide from within the organization, and an IISc faculty mentor will approve the project goals and timelines. The faculty mentor will offer high-level feedback on the project and its progress, and coordinate the evaluations, while the in- house company Guide will offer active feedback and close support. The evaluation committee, which includes the faculty mentor and company guide, is appointed by the Programme Curriculum Committee (PCC) for the stream.

## Admission Process

- **Minimum Eligibility:** All candidates must be nominated by their organisation and meet all these eligibility requirements:
    - BE/BTech in CSE/ECE/EE or equivalent discipline
    - At least 70% of marks or equivalent CGPA in all degrees
    - Two years of industrial experience by the start of the programme
    - A strong mathematical and programming background
- **Selection:** Based on an Online test. This will evaluate the technical ability of the candidate to succeed in the coursework and may include topics such as mathematics, basic programming, problem-solving, etc. at the undergraduate level. Syllabus and sample papers are available on the IKEN website.

# Data Science and Business Analytics (DSBA)

The Master of Technology (Online) programme in Data Science and Business Analytics is offered by the Division of Interdisciplinary Sciences at IISc. It is designed for early-career professionals with 2-8 years of experience to upskill them to become technology and business leaders in information-driven enterprises. The coursework establishes the foundations of data science, imparts training on data engineering and machine learning techniques, and practical business analysis skills. These learnings are coupled with a unique in-house project that applies the learnings to a hands-on project relevant to the industry. Faculty from the Departments of Computational and Data Sciences, Management Studies, Cyber Physical Systems, Centre for infrastructure, Sustainable Transportation and Urban Planning, etc. lead the courses through online lectures and tutorials. More details at DSBA Stream website.

## Program Structure

- **Core courses (12 credits):** These are typically taken in the first and second semesters.
    - Data Science in Practice (4 credits)
    - Probabilistic Machine Learning: Theory and Applications (4 credits)
    - Data Engineering at Scale (4 credits)
- **Elective courses (20 credits or more):** Sample electives are shown below. Students may take elective courses from *any of the three streams*. These are the minimum number of elective credits. More may be taken as well with permission from your organization.
    - Financial Analytics
    - Data Mining
    - Tensor computations for Data science
    - Artificial Intelligence for Medical Image Analysis
    - Applied Artificial Intelligence in Healthcare
    - Quantum Computing Methods: Theory and Applications
    - Linear optimization and Network science
- **Project (32 credits):** Students can start this three-term project for 32 credits after successfully completing all the core courses. Students will complete 20 project credits over two terms followed by a midterm evaluation, and the remaining 12 project credits in an exclusive semester for the final evaluation.

Student will propose the topic in consultation with their Guide from within the organization, and an IISc faculty mentor will approve the project goals and timelines. The faculty mentor will offer high-level feedback on the project and its progress, and coordinate the evaluations, while the in-house company Guide will offer active feedback and close support. The evaluation committee, which includes the faculty mentor and company guide, is appointed by the Programme Curriculum Committee (PCC) for the stream.

## Admission Process

- **Minimum Eligibility:** All candidates must be nominated by their organisation and meet all these eligibility requirements:
    - BE, BTech, BS(4yrs) or an Equivalent 4-year degree/diploma after 12th standard (or) a Masters' degree, in any discipline
    - At least 60% of marks or equivalent CGPA in all degrees
    - Two years of industrial experience by the start of the programme
    - A strong mathematical and programming background
- **Selection:** Based on an Online test. This will evaluate the technical ability of the candidate to succeed in the coursework and may include topics such as mathematics, basic programming, problem-solving, etc. at the undergraduate level. Syllabus and sample papers are available on the IKEN website.

# Electronics and Communication Engineering (ECE)

The Master of Technology (Online) programme in Electronics and Communication Engineering is offered by the Division of Electrical, Electronics, and Computer Sciences (EECS). The programme is designed for early-career professionals with 2-10 years of experience to strengthen their fundamentals and expose them to cutting-edge topics in the fast-changing areas of communications, networks, signal processing and information sciences, and high-frequency circuits and systems. The coursework consists of core courses, which provide the necessary foundation, and several elective courses, which provide exposure to the state-of-the-art and advanced methods. These learnings are coupled with a two-term in-house project that enables the student to apply the knowledge gained to a project relevant to the industry. The courses are taught online by faculty from the Department of Electronics and Communication Engineering (ECE). More details at ECE Stream website.

## Program Structure

- **Core courses (16 credits):** These are typically taken in the first and second semesters.
    - Random Processes (4 credits)
    - Digital Communications (4 credits)
    - Statistical Inference for Engineers and Data Scientists (4 credits)
    - Linear Algebra (4 credits)
- **Sample Elective courses (20 credits or more):** Sample electives are shown below. Students may take elective courses from *any of the three streams*. These are the minimum number of elective credits. More may be taken as well with permission from your organization.
    - Antennas and Circuits for Emerging Communication and Radar
    - Radio Frequency Integrated Circuits and Systems
    - Communication Systems Design
    - Process technology and System Engineering
- Machine Learning for wireless communication**Project (28 credits):** This involves a two-term project, with 10 credits in the first term followed by a mid-term evaluation, and 18 credits in the second term with a final evaluation. The second term project is taken up only after all courses are completed in prior semesters.

Student will propose the topic in consultation with their Guide from within the organization, and an IISc faculty mentor will approve the project goals and timelines. The faculty mentor will offer high-level feedback on the project and its progress, and coordinate the evaluations, while the in-house company Guide will offer active feedback and close support. The evaluation committee, which includes the faculty mentor and company guide, is appointed by the Programme Curriculum Committee (PCC) for the stream.

## Admission Process

- **Minimum Eligibility:** All candidates must be nominated by their organisation and meet all these eligibility requirements:
    - BE/BTech in EE/ECE or equivalent discipline
    - First Class or 60% of marks or equivalent CGPA in all degrees
    - Two years of industrial experience by the start of the programme
    - A strong mathematical and programming background

**Selection:** Based on an Online test. This will evaluate the technical ability of the candidate to succeed in the coursework and may include topics such as mathematics, basic programming, problem-solving, communications, etc., at the undergraduate level. Syllabus and sample papers and are available on the IKEN website.

**The following are indicative guidelines. The IISc Student Information Handbook has the authoritative set of rules and regulations.**

1. Each stream will be structured and administered by a Programme Curriculum Committee (PCC).
2. The number of course credits will be specified by the PCC and can vary between 32 - 48 credits.
3. Project credits will constitute the remainder of the credits, so that the total comes to 64 credits for the entire programme.
4. Core course can be between 9-16 credits and will be specified by the PCC. The rest shall be electives.
5. Course grading will follow IISc's 10-point grading system: A+ = 10, A = 9, B+ = 8, B = 7, C = 6, D = 5, F = 0.
6. Project grading will be Pass/Fail.
7. Only two F grades are permitted in the entire programme. If a third F grade is obtained, the registration will be terminated. Additional constraints apply, see F grade handling bullet below.
8. Students should get a minimum TGPA (term GPA) of 4.0/10.0 in the first term. Subsequent terms CGPA (cumulative GPA) should be at least 5.0/10.0. Students who do not satisfy these minimum requirements are liable to be discontinued from the course, and the discontinuation can be revoked only by the Director on the student providing a valid reason.
9. In the first term, if the TGPA falls between 4.0 and less than 5.0, the student will be advised to register for fewer courses in the following semester (if more than one course is credited).
10. F grade handling will be as for regular MTech's. (If the course is a core course, the student must repeat the core course. If the course is not a core course, the student must either repeat the F-grade-course to "clear the F grade" or take a replacement course specified by the PCC. Only one chance is given to clear each F grade. If the grade is F in the repetition or in the replacement course, the student must leave the programme. Both initial F and final higher grade will be reflected in the transcript. The F grade will be used in computation of the TGPA and CGPA until it is cleared whereafter it will be omitted in the calculations).
11. Candidates can have at most two semesters break in studies. The request must come through the sponsoring organisation. Women can avail a maternity leave as per Institute policy in case of maternity during the programme, in addition to the above. A registration fee needs to be paid for the break semesters to keep the registration alive.
12. In each semester in which the candidate registers for credits, the candidates should register for a minimum of 3 course credits and a maximum of 12 course credits (minimum 0 course credits and maximum 8 course credits in summer term). Project credits are not counted for these limits. This is until course requirements are completed. If projects and courses are both being taken in a term, the maximum is 16 credits (project + courses) in a semester and 12 credits (project + courses) in a summer term. If registration is only for project, with no courses, the maximum is 21 project credits in a semester and 12 project credits in a summer term.
13. The normal duration is 2-3 years. In special circumstances, a student may be permitted an extension, due to break in studies with approval of company coordinator or due to maternity leave, but must complete all requirements within a maximum of 4 years (5 years if maternity leave is availed).
14. The computation of final CGPA is done only after the student clears all courses successfully.
15. No distinction shall be awarded since the project grade is Pass/Fail.
16. Students shall have attended 75% of each course's lectures. A mechanism for monitoring attendance will be in place.
17. The PCC will identify a faculty mentor (or committee) during the course programme. Once the project starts, the project mentor (or committee), if different, will take over the role of faculty mentor.
18. Course dropping rules (drop without mention, drop with mention) and the dates for these will be as for the regular programmes and will be mentioned in the Student Information Handbook to be given at the start of the year. (Drop requires approval of the faculty mentor and course instructor and is permitted only if the total number of credits does not fall below the stipulated minimum. If course is dropped with mention, the dropped course will be included in the final transcript with a W (Withdrawn) grade. But the fees will not be refunded. The student may register again for a course dropped in a previous term; fees will be payable for the registration.
19. No transfer/upgradation to PhD is possible during the programme.
20. Assessment: Evaluation is based on instructors' assessment plan which will be pre- approved by the senate

curriculum committee (which approves the course). This will be indicated to the students at the start of the course.

21. Attendance in the terminal examination is compulsory. Students who are absent will be given an F grade. Absence on medical grounds, after due certification by the sponsoring organisation's appointed medical officer (a registered medical practitioner), may be condoned and the student will take a substitute examination within a prescribed period. Additional examination fees will be payable in case of a substitute examination.
22. Project evaluation: An assigned faculty mentor, who may be a part of an evaluation committee as specified by the PCC, will be responsible for approving the project goals, for regular evaluation (as per schedule indicated by the PCC), for bringing in the needed academic rigor, and for the final evaluation. A sponsoring company guide will be identified for each student and will monitor internal progress on a regular basis. One guide (from the sponsoring company) can guide at most 6 students. The internal guide shall have a PhD or five years' experience post Masters. Both the faculty mentor for the project and the organisational guide must be identified prior to start of the project.
23. In general, when the guidance is only from the sponsoring company, and IISc's role is restricted to approval of goals and evaluation, IPR rests with the sponsoring company. If guidance from the IISc faculty mentor is sought by the company, a specific IPR agreement for the retainer consultancy will be negotiated and put in place. In this case, the PCC needs to be informed and the agreement must be signed before guidance by the IISc faculty mentor begins.
24. Students should complete all core course credits before commencing on projects. See also maximum credits per term constraints. Additional requirements may be set by the individual PCC.
25. Privileges and responsibilities: During the tenure and while registration fees are paid to keep the registration ongoing:
    - IISc email id
    - Library access
    - Alumni/Alumnae privileges after the award of the degree.

*For more information, please contact IKEN Office. Telephone: +91-80-2293-2055/2508, Email:* ***office.iken@iisc.ac.in***