M. Tech. Computer Science and Engineering (CSE)

Programme Curriculum

Effective from academic year 2025-26

International Institute of Information Technology
Bangalore – 560100

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Overall M. Tech. CSE Programme Structure

The following table provides a summary of the credit distribution in the M.Tech. (CSE) programme.

Term	Duration	Credits	Courses
Preparatory Term	2 weeks	Not applicable	Orientation sessions on various topics
Semester 1	16 weeks	16 credits	Foundation Courses
Semester 2	16 weeks	16 credits	Electives
		0 credits	Technical Communication (Pass/Fail)
Semester 3	16 weeks	16 credits	Electives
Semester 4	26 weeks	16 credits	Masters Project / Internship / Thesis
Total			**64 credits**

Table 1: Overview of the curriculum

*Note: Each student can pursue a minimum of **12 credits** and a maximum of **20 credits** in any term. The ideal load is a minimum of 16 credits in each term.*

Credit System

All courses in the curriculum have credits distributed to them. The credit definition follows the L:T:P:C system where:

- **L (Lecture)** indicates the number of credit hours under Lecture category
- **T (Tutorial)** indicates the number of credit hours under Tutorial category
- **P (Practical)** indicates the number of credit hours under Practical category
- **C (Credits)** indicates the total credits associated as a combination of Lecture hours, Tutorial hours, and Practical hours

One credit hour under "L" and "T" translates into one hour of instruction. One credit hour under "P" translates into two hours of instruction. For the M. Tech. Degree program, the lecture and the credit components are considered; tutorials are not mandatory.

Grading System

IIIT-B follows a 4-point credit system for all programmes. Every student's academic performance is measured using Cumulative Grade Point Average (CGPA), which can take values between 0.00 and 4.00 (inclusive). The CGPA is calculated as a weighted average of the student's grade and the credits associated with the courses completed by the student.

The following table shows the grade points associated with each letter grade:

Letter Grade	Grade Points
A	4.00
A–	3.70
B+	3.40
B	3.00
B–	2.70
C+	2.40
C	2.00
D	1.00
F	0.00/Fail
S	Satisfactory, Grade points not applicable
X	Unsatisfactory, Grade points not applicable

Table 2: Grading scale

*Note: A minimum **CGPA of 2.4** is required for successful completion of the M. Tech. (CSE) degree.*

Areas of Specialization

- ✓ AIML (Artificial Intelligence & Machine Learning)
- ✓ TCS (Theoretical Computer Science)
- ✓ SSY (Software Systems)
- ✓ NC (Networking and Communication)
- ✓ VLSI (VLSI Systems)
- ✓ DT (Digital Society)

The M. Tech. (CSE) curriculum permits students to specialize in **Artificial Intelligence and Machine Learning (AI and ML)**. A student needs to take a minimum of five courses bucketed in this category to be eligible for this specialization.

Preparatory Courses

Students entering the M. Tech. programme are expected to come with some prior knowledge of programming. While we do not wish to conduct full-fledged programming courses at the master's level, we will provide an opportunity for the students to hone their programming skills in a structured way as part of the preparatory term.

In the preparatory term, M. Tech. (CSE) students will cover topics in:

- Programming (Python, C++, and Java)
- Basic Data Structures
- Introductory Probability
- Linear Algebra
- Systems level programming

Foundation Courses

M. Tech. (CSE) students in the first semester must complete 4 courses from the following courses, earning 16 credits:

1. Algorithms (4 credits)
2. Concrete Mathematics (4 credits)
3. Systems Software (2 credits)
4. Enterprise Application Development (2 credits)
5. Machine Learning (4 credits)
6. Mathematics for Machine Learning (4 credits)

Note: Systems Software and Enterprise Application Development should be taken together to ensure maximum benefit of learning software development.

Electives

Each student must complete **eight electives** for a total of 32 credits. Each elective will be associated with one or more areas of specialization. Every M. Tech. (CSE) student must complete at least six CSE core/elective courses during the first three semesters.

The curriculum of each elective course will be designed by the concerned faculty and approved by the Senate before being offered to the students. Some elective courses may require specific prerequisites. The applicability of electives courses for each specialization will be intimated to the students prior to course registration.

Project Electives / Reading Elective

1. There are two forms of special electives called: **Project Elective (PE)** and **Reading Elective (RE)**. These electives are intended for both experiential and guided learning.
2. Every PE course must have at least the following characteristics:
    - Overall Plan
    - Visible Output
    - Direct Supervision
3. PE and RE follow the usual letter grading pattern available to other courses.

4. M. Tech. students may opt for two PE or RE type courses in the entire programme duration. Note: One PE and one RE; two PE; or two RE are all allowed.

5. PE/RE courses cannot be counted towards the requirement of six CSE courses. For each specialization at most one PE or RE can be counted towards the specialization.

6. The involvement of external institutional entities, if any, in a Project Elective (PE) course should be expedited following the existing collaboration and IP policies of the Institute.

Thesis / Masters Project / Internship

Thesis/Masters Project/Internship shall be 26 weeks' duration, and a student can accumulate 16 credits on successful completion of thesis or Masters Project.

For Students pursuing Masters Project/Internship

- **Masters Project** is to be considered for six months (not less than five months) of supervised project work carried out at industry or academic institutions.

- The Masters Project committee will ensure that mid-term feedback is collected (for every student pursuing an internship) to ensure smooth progress towards completion.

- At the time of Masters Project completion, the Masters Project committee will also collect a certificate (satisfactory/unsatisfactory) from the concerned person of the organization. If the certificate is unsatisfactory, then the institute internship committee will review the matter. If they agree with the certificate given, then the student must carry out the internship again at the same or different place. If the certificate is satisfactory, then the student completes the requirements of the internship.

For Students pursuing Thesis

- There is an M. Tech. thesis committee including the supervisor and at least two additional faculty members. Members of this thesis committee will serve as thesis and oral examiners for each student pursuing a thesis.

- The thesis style rules are available in the LMS for all students to use. Additionally, both Word and LaTeX style files are available, which follow these rules. If a student chooses to use a word processor other than the ones above, they are welcome to do so if the rules are met.

- A soft copy of the thesis in PDF format should be sent to the IIIT-B librarian one week before the final submission of the thesis date according to the institute's calendar (which will be after the thesis oral exam). The soft copy of the thesis format must be officially approved by the librarian before the thesis goes into print and binding.

- The M. Tech. academic calendar will have dates fixed for the following tasks specific to thesis evaluation:

    - Constitution of thesis committee
    - Submission of draft to the committee (one week before the oral examination)
    - Week dedicated for all M. Tech. thesis defences

- Date for submission of soft copy to the librarian
- Date for final submission of the hardbound thesis to the library

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