

Indian Institute of Technology Madras

Web Enabled M.Tech

(For Working Professionals)



- ELECTRICAL ENGINEERING
- ENGINEERING DESIGN
- MECHANICAL ENGINEERING
- PROCESS SAFETY

About IITM CODE



We offer diverse programs emphasizing skill – based training in highly performing industrial domains. Web Enabled M.Tech programs have been curated factoring the needs of the industries and caters to the professional development of their employees. Being offered since 2017, the unique features of the program are the adequate opportunity for student – teacher interaction, availability of session recordings and flexibility to complete the program at their own pace with an upper cap.

Web Enabled M.Tech is a masters program offered with course work, laboratory and project work. The students complete the course work and execute the project in their employed organisation.

In case, the student is unable to provide the company support in the form of MoU or LoS, he can exit the program with a PG Diploma subject to completion of course work.

Additionally, we provide executive education programs to enhance leadership capabilities and strategic acumen for industry professionals. Our portfolio includes undergraduate programs such as BS in Data Science and Applications & BS in Electronic Systems, catering to a diverse student population.



WEB-ENABLED M.TECH PROGRAMS



OVERVIEW

Web–Enabled M.Tech Program enables professionals to obtain an M.Tech degree while working

ELIGIBILITY FOR THE PROGRAM

- Minimum 2 years of work experience
- Candidates must possess relevant background and should have completed requirements as per individual program.

PROGRAM MODALITIES

- Live classes in the evenings between 4 to 7 pm
- Online/In-person exams at centres

- Employer support through MoU/Letter of support for M.Tech project at company
- An intermediary exit with PG Diploma is offered on completion of coursework

	_	
(7)	7/8
Ì	ন	И

D

TIMELINES

Applications open – February to May Entrance Exam–June to July Classes commence in August/September

/=7	
\sim	
5	

SELECTION CRITERIA

Entrance Exam





AEROSPACE ENGINEERING

COURSE CURRICULUM

AEROSPACE ENGINEERING

Core Courses

- AS6520W Mathematics for Aero. Engineers
- AS5010W Aerodynamics & Aircraft performance
- AS5011W Compressible Fluid flows
- AS5030W Aerospace Structures
- AS5020W Aerospace Propulsion
- AS5040W Flight Mechanics

Elective Courses

Complete Elective list can be viewed at https://code.iitm.ac.in/aerospace

Project



SELECTION CRITERIA

Entrance Exam



SYLLABUS FOR THE ENTRANCE EXAM

- Strength of Materials
- Fluid Mechanics
- Thermodynamics
- Basic Mathematics



ELIGIBILITY

Bachelor's degree in Aerospace/ Civil/Chemical/ComputerScience/ Electrical/Mechanical/Metallurgical/ Naval Architecture OR Master's degree in Physics/Mathematics/Chemistry

Live Classes between 5:30pm - 7:00pm (IST)



AEROSPACE ENGINEERING

Specialization: Ammunition Technology

COURSE CURRICULUM

AMMUNITION TECHNOLOGY

Core Courses

- AS6520W Mathematics for Aero. Engineers
- AS5010W Aerodynamics & Aircraft performance
- AS5011W Compressible Fluid flows
- AS5030W Aerospace Structures
- AS5020W Aerospace Propulsion
- AS5040W Flight Mechanics
- AS6080W Theory of interior and intermediate ballistics
- AS6090W Theory of exterior and terminal ballistics
- AS6095W Design of Ammunition

Elective Courses

Complete Elective list can be viewed at https://code.iitm.ac.in/ammunition

Project



SELECTION CRITERIA

Entrance Exam



SYLLABUS FOR THE ENTRANCE EXAM

.

- Strength of Materials
- Fluid Mechanics
- Thermodynamics
- Basic Mathematics



ELIGIBILITY

Bachelor's degree in Aerospace/ Civil/Chemical/ComputerScience/ Electrical/Mechanical/Metallurgical/ Naval Architecture OR Master's degree in Physics/Mathematics/Chemistry

Live Classes between 5:30pm - 7:00pm (IST)



ARTIFICIAL INTELLIGENCE

COURSE CURRICULUM

Core Courses

- DA5000 Mathematical foundation for data science
- DAXXXX Python and data structures for data science
- DA5400 Foundations of machine learning
- DA6401 Introduction to deep learning

Electives

- CH5350W Applied Time Series
- ID6004W Industrial Vision in AI
- ID 5004W AI in Predictive Maintenance, **Reliability and Warranty**
- ID6003W AI in Process & Logistic Optimization
- ID6002W Online and Reinforcement Learning
- ID6001W Applied deep learning
- CH5440W Multivariate data analysis
- Generative Al

Lab

- DA5401 Data analytics lab
- DA5402 MLOPS lab

Project

On completion of coursework, students shall exit with a PG Diploma.

SELECTION CRITERIA Entrance Exam

SYLLABUS FOR THE **ENTRANCE EXAM**

- Probability and Statistics
- Linear Algebra
- Optimization
- Basic Machine Learning



ELIGIBILITY

- B.Tech/B.E. (4 years) in any branch with mathematics as compulsory subject in 10+2 system.
- MSc: BSc (Maths/IT/Statistics/computing) + MSc (Maths/IT/Statistics/computing) with mathematics as a compulsory subject in 10+2+3 system
- MCA:BSc (Maths/IT/statistics/computing) + MCA with mathematics as compulsory subject in 10+2+3 system

Live Classes between 4:00pm - 7:00pm (IST)



https://code.iitm.ac.in/industrial



COMPUTER SCIENCE & ENGINEERING

Specialization: Information Security

COURSE CURRICULUM

Core Courses

- CS6510W Cryptography Basics
- CS6030W Logic and Combinatorics in Computer Science
- CS5800W and CS6140W Advanced Data Structures and Algorithms

Elective Courses

- CS6580W Information Security and Secure Coding
- CS6847W Cloud Computing
- CS6745W Mining Massive Data Sets
- CS5011W Machine Learning
- MS6031W and 6032W Data Analysis for Research
- CS6570W Secure Systems Engineering
- CS6115W Computational Number Theory for Cryptography

Lab

- Advanced Computer Organization and Lab
- Advanced Operating Systems with Lab
- Advanced Networking with Lab

Project

.

SYLLABUS FOR THE ENTRANCE EXAM

SELECTION CRITERIA

Entrance Exam

Discrete Mathematics Programming and Data Structure Computer Organisation and Architecture



ELIGIBILITY

B.E./B.Tech in any Engineering branch/discipline, MCA, M.Sc.(CS) or Information Security (IS)

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/informationsecurity





Specialization: **Integrated Circuits & Systems**

COURSE CURRICULUM

INTEGRATED CIRCUITS & SYSTEMS

Core Courses

- EE5310W Analog Electronic Circuits
- EE5311W Digital IC Design

Elective Courses

- EE5003W Electrical Networks and systems
- EE5111W Estimation Theory
- EE5112W Detection Theory
- EE5141W Introduction to Wireless & **Cellular Communication**
- EE5325W Power Management Integrated circuits
- EE6130W Advanced Topics in Signal Processing - Radar
- EE 5180W Introduction to Machine Learning
- EE6180W Adv. Topics in A.I: Deep Learning for Imaging
- EE6320W RF Integrated Circuits
- CS6760W Digital Design Verification
- CS6230W CAD for VLSI

Project



SELECTION CRITERIA

Entrance Exam

SYLLABUS FOR THE **ENTRANCE EXAM**

Signal and Systems Time-Domain Analysis of CT **Fourier Series** Continuous-Time Fourier Transform



ELIGIBILITY

BE/B.Tech with specialization in ECE, EEE, Electronics & Instrumentation, Instrumentation & Control

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/integratedcircuits

On completion of coursework, students shall exit with a PG Diploma.



https://code.iitm.ac.in/integratedcircuits



Specialization: **Communication & Signal** Processing

COURSE CURRICULUM

COMMUNICATION & SIGNAL PROCESSING

Core Courses

- EE5110W Probability Foundations for **Electrical Engineers**
- EE5120W Applied Linear Algebra I for EE
- EE5130W Digital Signal Processing
- EE5140W Digital Modulation and Coding
- EE5150W Communication Networks
- EE5505W Wave Propagation in Communication
- EE5142W Introduction to Information Theory and Coding

Elective Courses

- EE5003W Electrical Networks and systems
- EE5111W Estimation Theory
- EE5112W Detection Theory
- EE5141W Introduction to Wireless & **Cellular** Communication
- EE5325W Power Management Integrated circuits
- EE6130W Advanced Topics in Signal Processing - Radar

Project



SELECTION CRITERIA

Entrance Exam



SYLLABUS FOR THE **ENTRANCE EXAM**

Signal and Systems Time-Domain Analysis of CT **Fourier Series Continuous-Time Fourier Transform**



ELIGIBILITY

BE/B.Tech with specialization in ECE, EEE, Electronics & Instrumentation, Instrumentation & Control

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/communicationsignals

On completion of coursework, students shall exit with a PG Diploma.



https://code.iitm.ac.in/communicationsignals



Specialization: Microelectronics

MICROELECTRONICS

Core Courses

- EE5311W Digital IC Design
- EE5310W Analog Electronic Circuit
- EE5320W Analog IC Design
- EE5313W Semiconductor Device Modelling
- EE5312W VLSI Technology
- EE5130W Digital Signal Processing

Elective Courses

- EE5003W Electrical Networks and systems
- EE5111W Estimation Theory
- EE5112W Detection Theory
- EE5141W Introduction to Wireless & Cellular Communication
- EE5325W Power Management Integrated circuits
- EE6130W Advanced Topics in Signal Processing – Radar
- EE 5180W Introduction to Machine Learning
- EE6180 Adv. Topics in A.I: Deep Learning for Imaging



SYLLABUS FOR THE ENTRANCE EXAM

SELECTION CRITERIA

Entrance Exam

Signal and Systems Time–Domain Analysis of CT Fourier Series Continuous–Time Fourier Transform



ELIGIBILITY

BE/B.Tech with specialization in ECE, EEE, Electronics & Instrumentation, Instrumentation & Control

Live Classes between 4:00pm - 7:00pm (IST)

Project

Complete Elective list can be viewed at

https://code.iitm.ac.in/microelectronics





Specialization: Multimedia

COURSE CURRICULUM

MULTIMEDIA

Core Courses

- EE5110W Probability Foundations for Electrical Engineers
- EE5120W Applied Linear Algebra I for EE
- EE5130W Digital Signal Processing
- EE5175W Image Signal Processing

Elective Courses

- EE5003W Electrical Networks and systems
- EE5111W Estimation Theory
- EE5112W Detection Theory
- EE5141W Introduction to Wireless & Cellular Communication
- EE5325W Power Management Integrated circuits
- EE6130W Advanced Topics in Signal Processing – Radar
- EE 5180W Introduction to Machine Learning
- EE6180W Adv. Topics in A.I: Deep Learning for Imaging
- EE6320W RF Integrated Circuits

Project



SELECTION CRITERIA

Entrance Exam

-	-	

SYLLABUS FOR THE ENTRANCE EXAM

Signal and Systems Time-Domain Analysis of CT Fourier Series Continuous-Time Fourier Transform



ELIGIBILITY

BE/B.Tech with specialization in ECE, EEE, Electronics & Instrumentation, Instrumentation & Control

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/multimedia

On completion of coursework, students shall exit with a PG Diploma.



https://code.iitm.ac.in/multimedia



ENGINEERING DESIGN

Specialization: E-Mobility

Core Courses

- ED5350W Electric Vehicle Engineering and Development
- ED5235W Power Electronics and Motor Drives for Electrified Vehicles
- ED5516W Design and Control of AC Machines for Electrified Vehicles
- ED5021W Battery Charging Technology
- ED5014W Energy Storage Devices and Systems
- ED5003W Electric Vehicle System Dynamics and Control

Elective Courses

- CY6015W Electrochemistry: Fundamentals and Applications
- EE5254W High Voltage Technology
- ED5080W Mechatronics System Design
- ED5345W Powertrain and Fuels
- ED5515W Fundamentals of Thermal Management in Electric Vehicles
- ED5512W Electromagnetic Compatibility for Automotive Electronics
- ED5217W Electric Vehicle Evaluation and Testing
- ED5004W AI Algorithms for E-Mobility Applications

Lab

E-Mobility Lab

Project

- Mini Project
- Main Project for WEMEM with employer / company support



SYLLABUS FOR THE ENTRANCE EXAM

SELECTION CRITERIA

• Linear Algebra

Entrance Exam

- Differential Equations
- Probability and Statistics
- Numerical Methods
- Vector Analysis
- Sequences and Series
- Basic Physics
- Analytical and Quantitative Aptitude



ELIGIBILITY Completed a BTech/BE in any engineering discipline with a minimum CGPA of 6.0 (out of 10) or 60%

On completion of coursework and mini project, students shall exit with a PG Diploma.

> Recorded videos with weekly live interactive sessions



MECHANICAL ENGINEERING

Specialization: **Mechanical Design**

COURSE CURRICULUM



SELECTION CRITERIA

Entrance exam

MECHANICAL DESIGN

Core Courses

- ME5201W Computational methods in engineering
- ME5203W Advanced Mechanics of Solids
- ME5128W Principles of Product Design
- ME5205W Theory of Vibrations
- ME6226W Product Reliability

Elective Courses

- ME6225W Failure Analysis and Design
- ME6010W Advanced Heat & Mass Transf
- ME5204W Finite Element Analysis
- ME7223W Optimization Methods for Mechanical Design
- ME6222W Design of Mechanical Transmission systems

Lab

ME54XX Automotive Laboratory

Project



SYLLABUS FOR THE **ENTRANCE EXAM**

- Engineering Mathematics
- Materials
- Applied Mechanics and Design



ELIGIBILITY

B.E/B.Tech in any specialization with adequate professional experience

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/mechanicaldesign

On completion of coursework, students shall exit with a PG Diploma.



https://code.iitm.ac.in/mechanicaldesign



MECHANICAL ENGINEERING

Specialization: Automotive Technology

COURSE CURRICULUM

AUTOMOTIVE TECHNOLOGY

Core Courses

- ME5201W Computational Methods in Engineering
- ME5109W Measurements in Thermal Engineering
- ME6162W IC engine combustion and pollution control
- ED5220W Vehicle Dynamics

Elective Courses

- ME 6400W Design of Combustion Engines
- ME 6420W Simulation of IC Engines Processes
- ME6430W Engine Systems & Performance
- ME6440W Alternate Fuels for IC Engines
- ME 6460W CFD and Its Applications to Engine Processes

Lab

ME54xx Automotive Laboratory

Project



SELECTION CRITERIA

Entrance Exam and Interview (if required)



SYLLABUS FOR THE ENTRANCE EXAM

- Heat Transfer
- Thermodynamics
- Fluid Mechanics
- Manufacturing and Metrology
- Mathematics

For detailed syllabus , please refer to Syllabus document



ELIGIBILITY

B.E/B.Tech in any specialization with adequate professional experience

Live Classes between 4:00pm - 7:00pm (IST)

Complete Elective list can be viewed at

https://code.iitm.ac.in/automotive





PROCESS SAFETY

Program Offered: PG Diploma

COURSE CURRICULUM

PROCESS SAFETY

Core Courses

- Fundamentals of Process Safety
- Process Hazard Analysis
- Risk Analysis
- Crisis and Incident Management
- Human Factors
- Safety Engineering

Elective Courses

- Advanced Process Hazard Analysis (Functional Safety)
- Reactive Hazards
- Process Safety Management
- Process Safety Digitalization

Lab

Process Safety Lab

SYLLABUS FOR THE **ENTRANCE EXAM**

SELECTION CRITERIA

Entrance Exam

Nature of Accident and major disasters

- Fire and Explosions: Introduction
- Introduction to Reliefs

ELIGIBILITY

- BE/B.Tech degree in Chemical, Civil Engg, Mech, Elec, Instrumentation Engg, Petroleum, or allied branches (or) MSc Chemistry
- Minimum 60% aggregate (or equivalent CGPA)

(Or)

- 50% aggregate + 2 years relevant work experience
- The 2 years relevant work experience will be ascertained by the Department based on the experience certificate submitted along with the application form.

Live Classes between 4:00pm - 7:00pm (IST)





Indian Institute of Technology – Madras, Chennai - 600 036.



