

MIT EECS Master's Program Curriculum

Building Excellence in Electrical Engineering and Computer Science

2-Year Semester-by-Semester Learning Topics Overview

Year 1 (First Year): Core Foundations and Fundamentals

Semester 1 (Fall): Mathematical Foundations and Programming Fundamentals

- Advanced Calculus and Linear Algebra, Probability and Statistics
- Programming Systems and Software Engineering
- Digital System Design and Computer Architecture
- Signals and Systems, Circuit Analysis
- Research Methods and Technical Communication

Semester 2 (Spring): Systems and Algorithms

- Advanced Algorithms and Data Structures
- Database Systems and Distributed Computing
- Electronic Circuits and Analog Design
- Control Systems and Signal Processing
- Machine Learning Fundamentals

Year 2 (Second Year): Advanced Topics and Specialization

Semester 1 (Fall): Advanced Systems and Specialization

- Computer Networks and Security
- VLSI Design and Embedded Systems
- Advanced Machine Learning and AI
- Wireless Communications and Information Theory
- Thesis Research I

Semester 2 (Spring): Research and Professional Development

- Advanced Topics in Chosen Specialization
 - Thesis Research II and Defense
 - Technology Entrepreneurship
 - Professional Ethics and Industry Practices
 - Capstone Project and Portfolio Development
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Specialization Tracks Available:

- **Artificial Intelligence and Machine Learning**
- **Computer Systems and Architecture**
- **Communications and Signal Processing**
- **Cybersecurity and Cryptography**
- **VLSI and Hardware Design**
- **Software Engineering and Distributed Systems**