

ELECTRICAL SCIENCE AND ENGINEERING (COURSE 6-1)

Department of Electrical Engineering and Computer Science (<http://catalog.mit.edu/schools/engineering/electrical-engineering-computer-science/#undergraduatestudytext>)

Bachelor of Science in Electrical Science and Engineering

General Institute Requirements (GIRs)

The General Institute Requirements include a Communication Requirement that is integrated into both the HASS Requirement and the requirements of each major; see details below.

Summary of Subject Requirements	Subjects
Science Requirement	6
Humanities, Arts, and Social Sciences (HASS) Requirement [two subjects can be satisfied by 6.207[<i>J</i>] and 6.805[<i>J</i>] in the Departmental Program]; at least two of these subjects must be designated as communication-intensive (CI-H) to fulfill the Communication Requirement.	8
Restricted Electives in Science and Technology (REST) Requirement [two subjects can be satisfied from among 18.03, 18.05, 18.600, and 6.002, 6.003, or 6.004 in the Departmental Program]	2
Laboratory Requirement (12 units) [can be satisfied by 6.01, 6.02, 6.03, or 6.08 together in the Departmental Program]	1
Total GIR Subjects Required for SB Degree	17

Physical Education Requirement

Swimming requirement, plus four physical education courses for eight points.

Departmental Program

Choose at least two subjects in the major that are designated as communication-intensive (CI-M) to fulfill the Communication Requirement.

Departmental Requirements	Units
6.0001 Introduction to Computer Science Programming in Python	6
18.03 Differential Equations	12
<i>Select one of the following:</i>	9-12
6.UAR Seminar in Undergraduate Advanced Research (12 units, CI-M)	
6.UAT Oral Communication (CI-M)	
<i>Select one of the following:</i>	12
6.01 Introduction to EECS via Robotics	

6.02	Introduction to EECS via Communication Networks
6.03	Introduction to EECS via Medical Technology
6.08	Introduction to EECS via Interconnected Embedded Systems

Electrical Engineering Requirements

6.002	Circuits and Electronics	12
6.003	Signal Processing	12
6.004	Computation Structures	12

Select three of the following:

6.011	Signals, Systems and Inference	36
6.012	Nanoelectronics and Computing Systems	
6.013	Electromagnetics Waves and Applications	
6.014	Electromagnetic Fields, Forces and Motion	
6.021[<i>J</i>]	Cellular Neurophysiology and Computing	
6.036	Introduction to Machine Learning	

Elective Subjects ¹

Select two subjects from the list of Advanced Undergraduate Subjects 24-30

Select two subjects from the departmental list of EECS subjects ² 24

Units in Major 159-168

Unrestricted Electives 48-81

Units in Major That Also Satisfy the GIRs (36-60)

Total Units Beyond the GIRs Required for SB Degree 180

The units for any subject that counts as one of the 17 GIR subjects cannot also be counted as units required beyond the GIRs.

¹ Chosen electives must satisfy each of the following categories: Advanced Departmental Laboratory, Independent Inquiry, and Probability. A subject may count toward more than one category.

² See departmental website (<http://www.eecs.mit.edu/academics-admissions/undergraduate-programs>) for list of acceptable EECS subjects.

Advanced Undergraduate Subjects

6.023[<i>J</i>]	Fields, Forces and Flows in Biological Systems	12
6.025[<i>J</i>]	Medical Device Design (CI-M)	12
6.026[<i>J</i>]	Biomedical Signal and Image Processing	12
6.027[<i>J</i>]	Biomolecular Feedback Systems	12
6.035	Computer Language Engineering	12

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6.047	Computational Biology: Genomes, Networks, Evolution	12	6.818	Dynamic Computer Language Engineering	12
6.061	Introduction to Electric Power Systems	12	6.819	Advances in Computer Vision	12
6.101	Introductory Analog Electronics Laboratory (CI-M)	12	6.837	Computer Graphics	12
6.111	Digital Systems Laboratory	12	6.905	Large-scale Symbolic Systems	12
6.115	Microcomputer Project Laboratory (CI-M)	12	18.404	Theory of Computation	12
6.1151	Microcomputer Project Laboratory - Independent Inquiry	15	Independent Inquiry Subjects		
6.131	Power Electronics Laboratory (CI-M)	12	6.035	Computer Language Engineering	12
6.1311	Power Electronics Laboratory - Independent Inquiry	15	6.047	Computational Biology: Genomes, Networks, Evolution	12
6.170	Software Studio	15	6.111	Digital Systems Laboratory	12
6.172	Software Performance Engineering	18	6.1151	Microcomputer Project Laboratory - Independent Inquiry (CI-M)	15
6.175	Constructive Computer Architecture	12	6.129[J]	Biological Circuit Engineering Laboratory (CI-M)	12
6.207[J]	Networks	12	6.1311	Power Electronics Laboratory - Independent Inquiry (CI-M)	15
6.215	Optimization Methods	12	6.141[J]	Robotics: Science and Systems (CI-M)	12
6.301	Solid-State Circuits	12	6.161	Modern Optics Project Laboratory (CI-M)	12
6.302	Feedback System Design	12	6.163	Strobe Project Laboratory (CI-M)	12
6.401	Introduction to Statistical Data Analysis	12	6.170	Software Studio	15
6.402	Modeling with Machine Learning: from Algorithms to Applications ¹	6	6.172	Software Performance Engineering	18
6.419[J]	Statistics, Computation and Applications	12	6.182	Psychoacoustics Project Laboratory (CI-M)	12
6.580[J]	Principles of Synthetic Biology	12	6.185[J]	Interactive Music Systems	12
6.602	Fundamentals of Photonics	12	6.338[J]	Parallel Computing and Scientific Machine Learning	12
6.701	Introduction to Nanoelectronics	12	6.402	Modeling with Machine Learning: from Algorithms to Applications ¹	6
6.717[J]	Design and Fabrication of Microelectromechanical Systems	12	6.419[J]	Statistics, Computation and Applications	12
6.801	Machine Vision	12	6.439[J]	Statistics, Computation and Applications	12
6.802[J]	Computational Systems Biology: Deep Learning in the Life Sciences	12	6.804[J]	Computational Cognitive Science	12
6.803	The Human Intelligence Enterprise	12	6.805[J]	Foundations of Information Policy (CI-M)	12
6.804[J]	Computational Cognitive Science	12	6.806	Advanced Natural Language Processing	12
6.806	Advanced Natural Language Processing	12	6.807	Computational Design and Fabrication	12
6.808[J]	Mobile and Sensor Computing	12	6.808[J]	Mobile and Sensor Computing	12
6.810	Engineering Interactive Technologies	12	6.810	Engineering Interactive Technologies	12
6.814	Database Systems	12	6.811[J]	Principles and Practice of Assistive Technology	12
6.815	Digital and Computational Photography	12	6.818	Dynamic Computer Language Engineering	12
6.816	Multicore Programming	12			
6.817[J]	Principles of Autonomy and Decision Making	12			

6.819	Advances in Computer Vision	12	6.182	Psychoacoustics Project Laboratory (CI-M)	12
6.864	Advanced Natural Language Processing	12	6.185[J]	Interactive Music Systems	12
6.869	Advances in Computer Vision	12	6.301	Solid-State Circuits	12
6.871[J]	Machine Learning for Healthcare	12	6.302	Feedback System Design	12
6.878[J]	Advanced Computational Biology: Genomes, Networks, Evolution	12	6.806	Advanced Natural Language Processing	12
6.9041	Ethics for Engineers - Independent Inquiry	12	6.807	Computational Design and Fabrication	12
6.905	Large-scale Symbolic Systems	12	6.808[J]	Mobile and Sensor Computing	12
6.945	Large-scale Symbolic Systems	12	6.816	Multicore Programming	12
6.UAR	Seminar in Undergraduate Advanced Research	6	6.819	Advances in Computer Vision	12
			6.837	Computer Graphics	12

¹ Students cannot receive credit without simultaneous completion of a 6-unit Common Ground disciplinary module. See subject description for more information.

Advanced Departmental Laboratory Subjects

6.025[J]	Medical Device Design (CI-M)	12
6.026[J]	Biomedical Signal and Image Processing	12
6.035	Computer Language Engineering	12
6.047	Computational Biology: Genomes, Networks, Evolution	12
6.073[J]	Creating Video Games	12
6.101	Introductory Analog Electronics Laboratory (CI-M)	12
6.111	Digital Systems Laboratory	12
6.115	Microcomputer Project Laboratory (CI-M)	12
6.1151	Microcomputer Project Laboratory - Independent Inquiry	15
6.129[J]	Biological Circuit Engineering Laboratory (CI-M)	12
6.131	Power Electronics Laboratory (CI-M)	12
6.1311	Power Electronics Laboratory - Independent Inquiry	15
6.141[J]	Robotics: Science and Systems (CI-M)	12
6.152[J]	Micro/Nano Processing Technology (CI-M)	12
6.161	Modern Optics Project Laboratory (CI-M)	12
6.163	Strobe Project Laboratory (CI-M)	12
6.170	Software Studio	15
6.172	Software Performance Engineering	18
6.175	Constructive Computer Architecture	12

Probability Subjects

6.008	Introduction to Inference	12
6.041	Introduction to Probability	12
6.042[J]	Mathematics for Computer Science	12
18.05	Introduction to Probability and Statistics	12
18.600	Probability and Random Variables	12