

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE (COURSE 6-2)

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

Bachelor of Science in Electrical Engineering and Computer Science

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 6.073[] and 6.805[] 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 [satisfied by 6.002, 6.003, 6.004, or 6.007 and 18.03, 18.05, or 18.600 in the Department Program] | 2 |
| Laboratory Requirement (12 units) [satisfied by 6.01, 6.02, or 6.03 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.

| Foundational Subjects | Units |
|---|-------|
| 6.0001 Introduction to Computer Science Programming in Python | 6 |
| 18.03 Differential Equations or 2.087 Engineering Mathematics: Linear Algebra and ODEs | 6-12 |
| 6.UAT Oral Communication (CI-M) ¹ | 9 |
| <i>Select one of the following:</i> | 12 |
| 6.01 Introduction to EECS via Robotics | |

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| 6.02 | Introduction to EECS via Communications Networks |
| 6.03 | Introduction to EECS via Medical Technology |

EECS Requirements ^{2,3}

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|---|-------|
| Select three subjects from the Level 1 list | 36 |
| Select three subjects from the Level 2 list | 36-39 |

Elective Subjects ^{3,4}

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|--|-------|
| Select two subjects from the list of Advanced Undergraduate Subjects | 24-27 |
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|--|----|
| Select two subjects from the departmental list of EECS subjects ⁵ | 24 |
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|-----------------------|----------------|
| Units in Major | 153-168 |
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|-------------------------------|--------------|
| Unrestricted Electives | 48-72 |
|-------------------------------|--------------|

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|---|---------|
| Units in Major That Also Satisfy the GIRs | (18-60) |
|---|---------|

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|--|---------|
| Total Units Beyond the GIRs Required for SB Degree | 180-186 |
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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 6.UAR Seminar in Undergraduate Advanced Research is also an acceptable option.
- ² Of the six EECS Requirement subjects, at least two must be categorized as Computer Science, at least two must be categorized as Electrical Engineering, and at least one must be categorized as EECS.
- ³ 6.008 can count as part of the EECS Requirements or as an elective subject, but not both.
- ⁴ 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.
- ⁵ See departmental website (<http://www.eecs.mit.edu/academics-admissions/undergraduate-programs>) for list of acceptable EECS subjects.

Level I EECS Requirements

Electrical Engineering

| | | |
|-------|--|----|
| 6.002 | Circuits and Electronics | 12 |
| 6.003 | Signals and Systems | 12 |
| 6.007 | Electromagnetic Energy: From Motors to Solar Cells | 12 |

Computer Science

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|-------|-----------------------------|----|
| 6.006 | Introduction to Algorithms | 12 |
| 6.009 | Fundamentals of Programming | 12 |

EECS

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|-------|---------------------------|----|
| 6.004 | Computation Structures | 12 |
| 6.008 | Introduction to Inference | 12 |

Level 2 EECS Requirements

Electrical Engineering

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|-------|--------------------------------|----|
| 6.011 | Signals, Systems and Inference | 12 |
|-------|--------------------------------|----|

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|--|--|----|--|---|----|
| 6.012 | Microelectronic Devices and Circuits | 12 | 6.814 | Database Systems | 12 |
| 6.013 | Electromagnetics and Applications | 12 | 6.815 | Digital and Computational Photography | 12 |
| 6.021[] | Cellular Neurophysiology and Computing | 12 | 6.816 | Multicore Programming | 12 |
| Computer Science | | | 6.819 | Advances in Computer Vision | 12 |
| 6.031 | Elements of Software Construction | 15 | 6.837 | Computer Graphics | 12 |
| 6.033 | Computer System Engineering (CI-M) | 12 | 6.905 | Large-scale Symbolic Systems | 12 |
| 6.034 | Artificial Intelligence | 12 | Advanced Departmental Laboratory Subjects | | |
| 6.045[] | Automata, Computability, and Complexity | 12 | 6.025[] | Medical Device Design (CI-M) | 12 |
| 6.046[] | Design and Analysis of Algorithms | 12 | 6.035 | Computer Language Engineering | 12 |
| EECS | | | 6.047 | Computational Biology: Genomes, Networks, Evolution | 12 |
| 6.036 | Introduction to Machine Learning | 12 | 6.073[] | Creating Video Games | 12 |
| Advanced Undergraduate Subjects | | | 6.101 | Introductory Analog Electronics Laboratory (CI-M) | 12 |
| 6.023[] | Fields, Forces and Flows in Biological Systems | 12 | 6.111 | Introductory Digital Systems Laboratory | 12 |
| 6.025[] | Medical Device Design (CI-M) | 12 | 6.115 | Microcomputer Project Laboratory (CI-M) | 12 |
| 6.035 | Computer Language Engineering | 12 | 6.129[] | Biological Circuit Engineering Laboratory | 12 |
| 6.047 | Computational Biology: Genomes, Networks, Evolution | 12 | 6.131 | Power Electronics Laboratory (CI-M) | 12 |
| 6.061 | Introduction to Electric Power Systems | 12 | 6.141[] | Robotics: Science and Systems (CI-M) | 12 |
| 6.101 | Introductory Analog Electronics Laboratory (CI-M) | 12 | 6.152[] | Micro/Nano Processing Technology (CI-M) | 12 |
| 6.111 | Introductory Digital Systems Laboratory | 12 | 6.161 | Modern Optics Project Laboratory (CI-M) | 12 |
| 6.115 | Microcomputer Project Laboratory (CI-M) | 12 | 6.163 | Strobe Project Laboratory (CI-M) | 12 |
| 6.131 | Power Electronics Laboratory (CI-M) | 12 | 6.170 | Software Studio | 12 |
| 6.172 | Performance Engineering of Software Systems | 18 | 6.172 | Performance Engineering of Software Systems | 18 |
| 6.175 | Constructive Computer Architecture | 12 | 6.175 | Constructive Computer Architecture | 12 |
| 6.301 | Solid-State Circuits | 12 | 6.182 | Psychoacoustics Project Laboratory (CI-M) | 12 |
| 6.302 | Feedback System Design | 12 | 6.302 | Feedback System Design | 12 |
| 6.602 | Fundamentals of Photonics | 12 | 6.804[] | Computational Cognitive Science | 12 |
| 6.701 | Introduction to Nanoelectronics | 12 | 6.806 | Advanced Natural Language Processing | 12 |
| 6.717[] | Design and Fabrication of Microelectromechanical Systems | 12 | 6.816 | Multicore Programming | 12 |
| 6.801 | Machine Vision | 12 | 6.819 | Advances in Computer Vision | 12 |
| 6.802[] | Foundations of Computational and Systems Biology | 12 | 6.837 | Computer Graphics | 12 |
| 6.803 | The Human Intelligence Enterprise | 12 | Independent Inquiry Subjects | | |
| 6.804[] | Computational Cognitive Science | 12 | 6.035 | Computer Language Engineering | 12 |
| 6.806 | Advanced Natural Language Processing | 12 | 6.047 | Computational Biology: Genomes, Networks, Evolution | 12 |
| 6.813 | User Interface Design and Implementation | 12 | | | |

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| 6.100 | Electrical Engineering and Computer Science Project | 12 |
| 6.111 | Introductory Digital Systems Laboratory | 12 |
| 6.1151 | Microcomputer Project Laboratory - Independent Inquiry (CI-M) | 15 |
| 6.129[] | Biological Circuit Engineering Laboratory (CI-M) | 12 |
| 6.1311 | Power Electronics Laboratory - Independent Inquiry (CI-M) | 15 |
| 6.141[] | Robotics: Science and Systems (CI-M) | 12 |
| 6.161 | Modern Optics Project Laboratory (CI-M) | 12 |
| 6.163 | Strobe Project Laboratory (CI-M) | 12 |
| 6.170 | Software Studio | 12 |
| 6.172 | Performance Engineering of Software Systems | 18 |
| 6.182 | Psychoacoustics Project Laboratory (CI-M) | 12 |
| 6.805[] | Foundations of Information Policy (CI-M) | 12 |
| 6.806 | Advanced Natural Language Processing | 12 |
| 6.811[] | Principles and Practice of Assistive Technology | 12 |
| 6.819 | Advances in Computer Vision | 12 |
| 6.905 | Large-scale Symbolic Systems | 12 |

Probability Subjects

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|--------|--|----|
| 6.008 | Introduction to Inference | 12 |
| 6.041A | Introduction to Probability I | 6 |
| 18.05 | Introduction to Probability and Statistics | 12 |
| 18.600 | Probability and Random Variables | 12 |