 Students choose three **header subjects**, which typically rely on a foundation course as a pre-requisite.

**Advanced undergraduate subjects** build on header material; exact pre-requisites vary.

- **Electromagnetics** 6.013
- **Nanoelectronics** 6.012
- **Cellular Neurophysiology** 6.021
- **Signals and Systems** 6.011
- **Electromagnetic Fields** 6.014
- **Machine Learning** 6.036

**Foundation subjects** build on introductory material:

- **Circuits** 6.002
- **Signals** 6.003
- **Computation Structures** 6.004

**Introductory subjects** introduce students to the breadth of our department, and teach fundamental skills for electrical engineering and computer science.

- **Differential Equations**
  - 18.03 or 2.087

**Course 6 Elective**

- Communication 6.UAT or 6.UAR
- Introduction to EECS
  - 6.01 or 6.02 or 6.03 or 6.08

**Programming Skills**
- 6.0001 or (6.145 + (6.01 or 6.08))

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1. 6.011 also requires a probability prerequisite
This is a common roadmap for 6-1, but many permutations are possible. For instance, there is a significant amount of flexibility in what order students take their foundations, and in whether they finish their foundations before taking any headers.

**Semester 1:** Programming skills, Differential Equations

**Semester 2:** Introduction to EECS, Foundation #1

**Semester 3:** Foundation #2, Foundation #3

**Semester 4:** Header #1, Header #2

**Semester 5:** Header #3, AUS #1

**Semester 6:** AUS #2, Course 6 Elective #1

6.UAT or 6.UAR and the second Course 6 elective are typically taken at some point during semesters 4-6
6-2: Electrical Engineering and Computer Science

The 6-2 curriculum builds primarily on the Physics II and Calculus II GiRs; not all courses require a GIR as a pre-requisite.

**Advanced Undergraduate Subjects**
build on introductory material; exact pre-requisites vary

- Electromagnetic Fields 6.014
- Cellular Neurophysiology 6.021
- Signals and Systems 6.011
- Nanoelectronics 6.012
- Electromagnetics 6.013
- Artificial Intelligence and Machine Learning 6.034 or 6.036
- Computer Systems 6.033
- Software Construction 6.031
- Communication 6.UAT or 6.UAR

**Course 6 Elective**

- Algorithms and Computation 2
- Programming 6.034 or 6.046

**Course 6 Elective**

- Algorithms 6.006
- Software Construction 6.031

Students must choose three header subjects, which typically rely on a foundation course as a pre-requisite.

- Electromagnetic Fields 6.014
- Cellular Neurophysiology 6.021
- Signals and Systems 6.011
- Nanoelectronics 6.012
- Electromagnetics 6.013
- Artificial Intelligence and Machine Learning 6.034 or 6.036
- Computer Systems 6.033
- Software Construction 6.031
- Communication 6.UAT or 6.UAR

**Advanced Undergraduate Subject**

- Differential Equations 18.03 or 2.087
- Inference 6.008
- Computation Structures 6.004
- Programming 6.009

**Course 6 Elective**

- Algorithms and Computation 2
- Programming 6.034 or 6.046

Students must choose three header subjects, which typically rely on at least one EE foundation.

- Circuits 6.002
- Signals 6.003
- Inference 6.008
- Computation Structures 6.004
- Programming 6.009

**Course 6 Elective**

- Algorithms 6.006

Students must choose three header subjects, which typically rely on at least one CS foundation.

- Algorithms 6.006
- Software Construction 6.031

Students must choose headers and foundations to span the breadth of EE, EECS, and CS.

1 of the headers and foundations, two must be from EE, two from CS, and one from EECS

6.045 and 6.046 also require 6.042, either as a direct pre-req or as a pre-req to 6.006
This is a common roadmap for 6-2, but many permutations are possible. For instance, there is a significant amount of flexibility in what order students take their foundations, and in whether they finish their foundations before taking any headers.

**Semester 1:** Programming skills, Differential Equations

**Semester 2:** Introduction to EECS, Foundation #1

**Semester 3:** Foundation #2, Foundation #3

**Semester 4:** Header #1, Header #2

**Semester 5:** Header #3, AUS #1

**Semester 6:** AUS #2, Course 6 Elective #1

6.UAT or 6.UAR and the second Course 6 elective are typically taken at some point during semesters 4-6.
advanced undergraduate subjects
build on header material; exact pre-requisites vary

header subjects typically rely on a foundation course as a pre-requisite

Artificial Intelligence and Machine Learning
6.034 or 6.036

Computer Systems
6.033

Software Construction
6.031

Algorithms and Computation
6.045 or 6.046

Computation Structures
6.004

Programming
6.009

Advanced Undergraduate Subject

Programming Skills
6.0001 or (6.145 + (6.01 or 6.08))

Discrete Math
6.042

introducory subjects
introduce students to the breadth of our department, and teach fundamental skills for electrical engineering and computer science

Communication
6.046

Course 6
Elective

two additional subjects are typically taken in the junior or senior year

foundation subjects build on introductory material

Computation Structures
6.004

Programming
6.009

Algorithms
6.006

Advanced Undergraduate Subject

Introduction to EECS
6.01 or 6.02 or 6.03 or 6.08

Programming Skills
6.0001 or (6.145 + (6.01 or 6.08))

6-3: Computer Science and Engineering
The 6-3 curriculum builds primarily on the Calculus II GIR; not all courses require a GIR as a pre-requisite
This is a common roadmap for 6-3, but many permutations are possible. For instance, there is a significant amount of flexibility in what order students take their foundations, and in whether they finish their foundations before taking any headers.

| Semester 1: | Programming skills, Discrete math |
| Semester 2: | Introduction to EECS, Foundation #1 |
| Semester 3: | Foundation #2, Foundation #3 |
| Semester 4: | Header #1, Header #2 |
| Semester 5: | Header #3, Header #4 |
| Semester 6: | AUS #1, AUS #2 |

6.UAT or 6.UAR and the Course 6 elective are typically taken at some point during semesters 4-6.
6-7: Computer Science and Molecular Biology

The 6-7 curriculum builds primarily on the Chemistry and Biology GIRs; not all courses require a GIR as a pre-requisite.

### Computer Science Subjects
- **Algorithms**
  - 6.009 or 6.031
- **Programming #1**
  - 6.009 or 6.009
- **Programming #2**
  - 6.009 or 6.009
- **Discrete Math**
  - 6.042

### Biology and Chemistry Subjects
- **Cell Biology**
  - 7.06
- **Biochemistry**
  - 7.05
- **Genetics**
  - 7.03
- **Organic Chemistry**
  - 5.12
- **Thermodynamics**
  - 5.60 or 20.110
- **Introductory Lab**
  - 7.02, 20.109\(^1\), or 20.129

### Communication
- **6.UAT or 6.UAR**

\(^1\) 20.109 has additional pre-requisites.
This is one possible roadmap for 6-7, but many permutations are possible. For instance, there is a significant amount of flexibility in what order students take their introductory courses.

**Semester 1:** Programming #1, Discrete math

**Semester 2:** Programming #2, Organic Chemistry, Thermodynamics

**Semester 3:** Intro Lab, Genetics

**Semester 4:** Biochemistry, Algorithms

**Semester 5:** Cell Biology, Algorithms

**Semester 6:** Computational Biology REST, Biology REST

6.UAT or 6.UAR is typically taken at some point during semesters 4-6.
The 6-14 curriculum builds primarily on the Calculus II GIR; not all courses require a GIR as a pre-requisite.
This is one possible roadmap for 6-14, but many permutations are possible. For instance, there is a significant amount of flexibility in what order students take their introductory courses.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Linear Algebra, Discrete Math, Programming #1 + #2 (if 6.0002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 2</td>
<td>Probability and Statistics, Programming #2 (if 6.009), Microeconomics</td>
</tr>
<tr>
<td>Semester 3</td>
<td>Algorithms, Econometrics</td>
</tr>
<tr>
<td>Semester 4</td>
<td>Machine Learning, Advanced Algorithms</td>
</tr>
<tr>
<td>Semester 5</td>
<td>Intermediate Economics, Networks and Optimization, Elective #1</td>
</tr>
<tr>
<td>Semester 6</td>
<td>Elective #2, Elective #3</td>
</tr>
</tbody>
</table>

The communications class is typically taken at some point during semesters 4-6.