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** \(^1\) 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
- **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))

\(^1\) 6.011 also requires a probability prerequisite

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

- **Communication** 6.UAT or 6.UAR
- **Course 6 Elective**
- **Course 6 Elective**

The 6-1 curriculum builds primarily on the Physics II and Calculus II GIRs; not all courses require a GIR as a pre-requisite
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.
The 6-2 curriculum builds primarily on the Physics II and Calculus II GIRs; not all courses require a GIR as a pre-requisite.

### Introduction

**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

**Electrical Engineering Subjects**

- **Circuits**
  - 6.002

- **Signals**
  - 6.003

- **Electromagnetic Fields**
  - 6.014

- **Nanoelectronics**
  - 6.012

- **Electromagnetics**
  - 6.013

- **Signals and Systems**
  - 6.011

**EECS Subjects**

- **Machine Learning**
  - 6.036

- **Introduction to EECS**
  - 6.01 or 6.02 or 6.03 or 6.08

- **Computer Systems**
  - 6.033

- **Artificial Intelligence**
  - 6.034

- **Software Construction**
  - 6.031

- **Programming**
  - 6.009

- **Computation Structures**
  - 6.004

- **Inference**
  - 6.008

- **Electromagnetic Fields**
  - 6.014

- **Nanoelectronics**
  - 6.012

- **Cellular Neurophysiology**
  - 6.021

**Computer Science Subjects**

- **Programming Skills**
  - 6.0001 or 6.0002

### Advanced Undergraduate Subjects

**Advanced Undergraduate Subject**

- **Programming Skills**
  - 6.0001 or 6.0002

- **Differential Equations**
  - 18.03 or 2.087

- **Introduction to EECS**
  - 6.01 or 6.02 or 6.03 or 6.08

- **Computer Systems**
  - 6.033

- **Artificial Intelligence**
  - 6.034

- **Software Construction**
  - 6.031

### Course 6 Elective

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

### Course 6 Elective

- **Programming Skills**
  - 6.0001 or 6.0002

### 6-2 Curriculum

- **Electrical Engineering and Computer Science**

- **Signals and Systems**
  - 6.011

- **Nanoelectronics**
  - 6.012

- **Electromagnetics**
  - 6.013

- **Signals and Systems**
  - 6.011

- **Nanoelectronics**
  - 6.012

- **Electromagnetics**
  - 6.013

- **Signals and Systems**
  - 6.011

- **Nanoelectronics**
  - 6.012

- **Electromagnetics**
  - 6.013

### Pre-requisites

1. of the headers and foundations, two must be from EE, two from CS, and one from EECS
2. 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
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

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

- **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

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

- **Computation Structures** 6.004
- **Programming** 6.009
- **Algorithms** 6.006

**foundation subjects** build on introductory material

- **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))

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

- **Discrete Math** 6.042

**Communication** 6.UAT or 6.UAR

**Course 6 Elective**

two additional subjects are typically taken in the junior or senior year
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
- **Programming #1**
  - 6.009 or 6.009
- **Programming #2**
  - 6.009 or 6.031
- **Discrete Math**
  - 6.042
- **Algorithms**
  - 6.006
  - 6.046

### Biology and Chemistry Subjects
- **Organic Chemistry**
  - 5.12
- **Cell Biology**
  - 7.06
- **Biochemistry**
  - 7.05
- **Genetics**
  - 7.03
- **Introductory Lab**
  - 7.02, 20.109¹, or 20.129
- **Thermodynamics**
  - 5.60 or 20.110

¹ 20.109 has additional pre-requisites

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

**Restricted Elective**
- Biology
- Computational Biology

**Exact pre-requisites vary**
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.
6-14: Computer Science, Economics, and Data Science

The 6-14 curriculum builds primarily on the Calculus II GIR; not all courses require a GIR as a pre-requisite.

**Computer Science Subjects**
- Algorithms 6.006
- Machine Learning 6.036
- Programming #1 6.0001
- Programming #2 6.0002 or 6.009

**Data Science or Theory Elective**
- Exact pre-requisites vary

**Communication**
- 6.UAT, 6.UAR, or 15.276

**Economics and Data Science Subjects**
- Intermediate Economics 14.05, 14.18, or 14.33
- Networks and Optimization 6.207, 6.215, or 15.053
- Microeconomics 14.01 or 14.03
- Econometrics 14.32
- Probability and Statistics 6.041, 14.30, or 18.600
- Linear Algebra 18.06
- Discrete Math 6.042

**Economics Theory Elective**
- Exact pre-requisites vary

**Computer Science Subjects**
- Advanced Algorithms 6.046
- Machine Learning 6.036
- Programming #2 6.0002 or 6.009
- Programming #1 6.0001

**Data Science Elective**
- Exact pre-requisites vary
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.

| Semester 1: | Linear Algebra, Discrete Math, Programming #1 + #2 (if 6.0002) |
| Semester 2: | Probability and Statistics, Programming #2 (if 6.009), Microeconomics |
| Semester 3: | Algorithms, Econometrics |
| Semester 4: | Machine Learning, Advanced Algorithms |
| Semester 5: | Intermediate Economics, Networks and Optimization, Elective #1 |
| Semester 6: | Elective #2, Elective #3 |

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