## Major Requirements

### Lower Division Requirements

- **CHEM 6A** General Chemistry I
- **MATH 20A** Calculus I
- **MATH 20B** Calculus II
- **MATH 20C** Calculus III
- **MATH 20D** Differential Equations
- **PHYS 2A** Mechanics
- **PHYS 2B** Electricity and Magnetism
- **PHYS 2C** Fluids, Waves, Thermodynamics, Optics
- **PHYS 2D** Relativity and Quantum
- **PHYS 2DL** Linear Algebra

### Upper Division Requirements

- **ECE 100** Linear Electronic Systems
- **ECE 101** Linear Systems Fundamentals
- **ECE 102** Intro to Active Circuit Design
- **ECE 103** Fundamentals/Devices & Materials
- **ECE 107** Electromagnetism
- **ECE 109** Eng. Probability & Stats

### Depth: 7 courses

- **ECE 123** & **166**
- **ECE 135A** & **135B**
- **ECE 182** & (181 or 183):

### Design Course: ECE 111, 115, 191, or 190

### Electives:

- 3 Professional
- 2 Technical

---

Please Note:

- PHYS 2DL and PHYS 130A have prerequisites that are not listed above. PHYS 2DL requires PHYS 2BL or 2CL, PHYS 130A requires 100B and 110A. PHYS 100B requires PHYS 100A, 105A and MATH 18. The upper division prerequisites can be applied towards elective requirements.

- *ECE 123 & 166 or ECE 135A & 135B or ECE 182 & (181 or 183): The 2 depth courses indicated * are not always offered in fall and winter, consult with the ECE Undergraduate Office for more detailed information or visit our website.

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- Due to six different college requirements, only major requirements are listed.
## Major Requirements

### Lower Division Requirements

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### Upper Division Requirements

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**please note:**
- Design Course: ECE 111, 115, 191, or 190

Electives:
- Technical
  - 
  - 
  - 
  - 

ECE Undergraduate Student Affairs Office | Jacobs Hall 2701 & 2702 | ece.ucsd.edu
Questions? Go to vac.ucsd.edu
Updated 11/29/2017
### Communications Systems Depth

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### MAJOR REQUIREMENTS

#### Lower Division Requirements
- CHEM 6A General Chemistry I
- MATH 18 Linear Algebra
- PHYS 2A Mechanics
- MATH 20A Calculus I
- PHYS 2B Electricity and Magnetism
- MATH 20B Calculus II
- PHYS 2C Flu, Wav, Thrm, Optics
- MATH 20C Calculus III
- PHYS 2D Relativity & Quantum
- MATH 20D Differential Equations
- MATH 20E Vector Calculus
- ECE 5 Intro to ECE
- ECE 15 Engineering Computation
- ECE 25 Intro to Digital Design
- ECE 30 Intro to Computer Eng
- ECE 35 Intro to Analog Design
- ECE 45 Circuits & Systems
- ECE 65 Components & Circuits Lab

#### Upper Division Requirements
- ECE 100 Linear Electronic Systems
- ECE 101 Linear Systems Fundamentals
- ECE 102 Intro Active Circuit Design
- ECE 107 Electromagnetism
- ECE 109 Eng. Probability & Stats

### COMMUNICATIONS SYSTEMS DEPTH
- ECE 153 Probability and Random Processes for Engineers
- ECE 154A Communications Systems I
- ECE 154B Communications Systems II
- ECE 154C Communications Systems III
- ECE 158A Data Networks I

- Design Course: ECE 111, 115, 191, or 190

#### ELECTIVES
- 4 Technical
  - __________
- 2 Professional
  - __________
## Computer System Design Depth

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### Electronic Circuits & Systems Depth

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<td>Tech. Elective 4</td>
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### MAJOR REQUIREMENTS

#### Lower Division Requirements

- CHEM 6A General Chemistry I
- MATH 20A Calculus I
- PHYS 2A Mechanics
- MATH 20B Calculus II
- PHYS 2B Electricity and Magnetism
- MATH 20C Calculus III
- PHYS 2C Flu,Wav,Thmdyn,Optics
- MATH 20D Differential Equations
- PHYS 2D Relativity & Quantum
- MATH 20E Vector Calculus
- MATH 18 Linear Algebra

#### Year 1
- ECE 5 or ECE 15
- ECE 25
- ECE 35
- MATH 20E
- PHYS 2D

#### Year 2
- ECE 100
- ECE 101
- ECE 103
- ECE 107
- ECE 109
- ECE 165

#### Year 3
- ECE 164
- ECE 166
- Prof. Elective 2
- Tech. Elective 4

#### Upper Division Requirements

**BREADTH**
- ECE 100 Linear Electronic Systems
- ECE 101 Linear Systems Fundamentals
- ECE 102 Intro Active Circuit Design
- ECE 103 Fundamentals/Devcs & Matrls
- ECE 107 Electromagnetism
- ECE 109 Eng. Probability & Stats

**ELECTRONIC CIRCUITS & SYSTEMS DEPTH**
- ECE 164 Analog Integrated Circuit Design
- ECE 165 Digital Integrated Circuit Design
- ECE 166 Microwave Systems and Circuits

#### ELECTIVES

5 Technical

<table>
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<tr>
<th>2 Professional</th>
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# Electrical Devices & Materials Depth

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## MAJOR REQUIREMENTS

### Lower Division Requirements
- CHEM 6A General Chemistry I
- PHYS 2A Mechanics
- PHYS 2B Electricity and Magnetism
- PHYS 2C Flu,Wav,Thrmdyn,Optics
- PHYS 2D Relativity & Quantum

- ECE 5 Intro to ECE
- ECE 15 Engineering Computation
- ECE 25 Intro to Digital Design
- ECE 30 Intro to Computer Eng
- ECE 35 Intro to Analog Design
- ECE 45 Circuits & Systems
- ECE 65 Components & Circuits Lab

### Upper Division Requirements

#### BREADTH
- ECE 100 Linear Electronic Systems
- ECE 101 Linear Systems Fundamentals
- ECE 102 Intro Active Circuit Design
- ECE 103 Fundamentals/Devises & Matrls
- ECE 107 Electromagnetism
- ECE 109 Eng. Probability & Stats

#### ELECTRONIC DEVICES & MATERIALS DEPTH
- ECE 135A Semiconductor Physics
- ECE 135B (Electronic Devices
- ECE 136L Microelectronics Laboratory
- ECE 183 Optical Electronics

- Design Course: ECE 111, 191, or 190

### ELECTIVES
- 4 Technical
- 2 Professional

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### Machine Learning & Controls Depth

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### MAJOR REQUIREMENTS

**Lower Division Requirements**
- CHEM 6A General Chemistry I
- PHYS 2A Mechanics
- PHYS 2B Electricity and Magnetism
- PHYS 2C Flu,Wav,Thmdyn,Optics
- PHYS 2D Relativity & Quantum
- ECE 5 Intro to ECE
- ECE 15 Engineering Computation
- ECE 25 Intro to Digital Design
- ECE 30 Intro to Computer Eng
- ECE 35 Intro to Analog Design
- ECE 45 Circuits & Systems
- ECE 65 Components & Circuits Lab

**Upper Division Requirements**

**BREADTH**
- ECE 100 Linear Electronic Systems
- ECE 101 Linear Systems Fundamentals
- ECE 107 Electromagnetism
- ECE 109 Eng. Probability & Stats

**MACHINE LEARNING & CONTROLS DEPTH**
- ECE 171A Linear Control System Theory
- ECE 174 Intro to Linear and Nonlinear Optimization with Applications
- ECE 175A Elements of MI: Pattern Recognition & Machine Learning
- *One of: ECE 171B Linear Control System Theory, OR ECE 172A Intro to Intelligent Sys: Robotics & Machine Intelligence, OR ECE 175B Elements of MI: Probabilistic Reasoning & Graphical Models

- Design Course: ECE 111, 191, or 190

**ELECTIVES**
- 6 Technical
- 2 Professional
## MAJOR REQUIREMENTS

### Lower Division Requirements

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### Upper Division Requirements

- **BREADTH**
  - ECE 100 Linear Electronic Systems
  - ECE 101 Linear Systems Fundamentals
  - ECE 103 Fundamentals/Devics & Matrils
  - ECE 107 Electromagnetism
  - ECE 109 Eng. Probability & Stats

- **PHOTONICS DEPTH**
  - ECE 181 Physical Optics and Fourier Optics
  - ECE 182 Electromagnetic Optics, Guided-Wave, and Fiber Optics
  - ECE 183 Optical Electronics
  - One of: ECE 184 Optical Information Processing and Holography, OR ECE 185 Lasers and Modulators

- Design Course: ECE 111, 191, or 190

### ELECTIVES

- **5 Technical**
- **2 Professional**

---

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## MAJOR REQUIREMENTS

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- PHYS 2A Mechanics
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- PHYS 2C Flu, Wav, Thmdyn, Optics
- PHYS 2D Relativity & Quantum
- ECE 5 Intro to ECE
- ECE 15 Engineering Computation
- ECE 25 Intro to Digital Design
- ECE 30 Intro to Computer Eng
- ECE 35 Intro to Analog Design
- ECE 45 Circuits & Systems
- ECE 65 Components & Circuits Lab

### Upper Division Requirements

#### BREADTH
- ECE 100 Linear Electronic Systems
- ECE 101 Linear Systems Fundamentals
- ECE 107 Electromagnetism
- ECE 109 Eng. Probability & Stats

#### SIGNAL & IMAGE PROCESSING DEPTH
- ECE 153 Probability and Random Processes for Engineers
- ECE 161A Intro to Digital Signal Processing
- ECE 161B Digital Signal Processing I
- ECE 161C Applications of Digital Signal Processing

- Design Course: ECE 111, 191, or 190

### ELECTIVES
- 6 Technical
- 2 Professional

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