# Plan of Study for the Electrical Engineering SB Concentration

Effective for Students Declaring the Concentration after March 2026

DATE: _____ NAME: _____

CLASS: _____ EMAIL: _____

This Plan of Study Form is for a (*Circle One*): ◯ DECLARATION ◯ REVISION

*The S.B. Program in Electrical Engineering must contain at least 20 half courses: 4 half-courses in mathematics, 4 half-courses in basic sciences, and 12 half-courses in engineering topics. Plans of Study will not be considered final until this form has been signed. The signature of this form ensures that the proposed plan meets the ABET distribution requirements.*

**Please list your selected concentration courses in the schedule below:**

| Fall 1 | Spring 1 | Fall 2 | Spring 2 | Fall 3 | Spring 3 | Fall 4 | Spring 4 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| REQUIRED COURSES | Selected Courses |
|---|---|
| **Mathematics Required** (2-4 courses)<br><br>*Begin according to placement:*<br>Math 1a – Intro to Calculus (or Math Ma & Mb)<br>Math 1b – Integration, Series, and Differential Equations<br>Math 21a – Multivariable Calculus (or Math 22b)<br>Math 21b – Linear Algebra & Differential Equations (or Math 22a) | |
| **Probability and Statistics** (1 course, required)<br><br>ECE 150 – Probability with Engineering Applications | |
| **Mathematics Elective** (1 course, if you started in Math 21a or higher)<br><br>1. | |
| **Physics** (2 courses)<br><br>PS 12a – Mechanics and Statistical Physics (or Phys 15a, 16, or AP 50a)<br>PS 12b – Electromagnetism and Quantum Physics (or Phys 15b, or AP 50b) | |
| **Science Electives** (2 courses, see list on page 3)<br><br>1.<br><br>2. | |

| REQUIRED COURSES | Selected Courses |
|---|---|
| **Computer Science** (1 course)<br><br>CS 32 – Computational Thinking & Problem Solving<br>CS 50 – Intro to Computer Science<br>CS 51 – Abstraction and Design in Computation<br>CS 61 – Systems Programming & Machine Organization | |
| **Electrical Engineering Core** (4 courses)<br><br>ECE 141 – Computing Hardware<br>ECE 152 – Circuits, Devices, and Transduction<br>ECE 155 – Systems and Control<br>ECE 156 – Signals and Communications | |
| **Electrical Engineering Electives** (3 courses, see list on page 3)<br><br>1.<br><br>2.<br><br>3. | |
| **Engineering (or Additional Electrical) Electives** (2 courses, see list on page 3)<br><br>1.<br><br>2. | |
| **Engineering Design** (2 courses)<br><br>ES 55 – Fundamentals of Engineering Design<br>ES 100hf – Engineering Design Projects | |

*No more than three of ESE 6, ECE 50, ES 51, ES 53 can count toward concentration credit*
** ES 55 must be taken in the junior year, prior to taking ES 100hf to count for the junior design requirement*

_____ _____
Student Signature Date

_____ _____
EE Concentration Approver Date

This plan does ☐ / does not ☐ meet the ABET distribution requirements

_____ _____
Office of Academic Programs Date:

**Mathematics Electives**

- AM 104 – Series Expan & Complex Analysis
- AM 105 – Ordinary & Partial Diff Eqs
- AM 106 – Applied Algebra
- AM 107 – Graph Theory & Combinatorics
- AM 108 – Nonlinear Dynamical Systems
- AM 109 – Intro to PDE and Applications
- AM 120 – Applied Lin Algebra & Big Data

**Science Electives**

*Introductory Courses*

- LS 1a – Intro to the Life Sciences
  ***or*** LPS A – Foundational Chem & Bio
- PS 11 – Found & Frontiers of Modern Chem
- CHEM 10 – Quantum & Stat Found of Chem
- PHYS 15c – Wave Phenomena
- ASTRO 16 – Stellar & Planetary Astro
- ASTRO 17 – Galactic & Extragalactic Astro

*Upper Level Courses*

- CHEM 160 – Quantum Chemistry
- PHYS 19 – Intro to Theoretical Physics
- PHYS 125 – Widely Applied Physics
- PHYS 143a – Quantum Mechanics I
- PHYS 143b – Quantum Mechanics II
- PHYS 153 – Electrodynamics
- PHYS 181 – Stat Mech & Thermodynamics

**Electrical Engineering Electives**

*ECE 50 can only be taken for concentration credit during first or sophomore year. Not more than two from: ECE 50, CS 61, ES 170*

- AP 195A – Intro to Solid State Physics
- BE 128 – Intro to Biomedical Imaging & Sys
- BE 129 – Intro to Bioelectronics
- BE 130 – Neural Control of Movement
- BE 131 – Neuroengineering
- CS 61 – System Program & Machine Org
- CS 1280 – Convex Optimization & App in ML
- CS 1430 – Computer Networks
- CS 1440r – Networks Design Projects
- CS 1840 – Intro to Reinforcement Learning
- CS 1890 – Autonomous Multi-Robot Systems
- CS 2490r – Tiny Machine Learning
- ECE 50 – Intro to Electrical Engineering
- ECE 143 – Computer Vision
- ECE 145 – Modern Electric Power Systems
- ECE 146 – Computer Architecture
- ECE 148 – Design of VLSI Circuits & Systems
- ECE 151 – Applied Electromagnetism
- ECE 154 – Electronic Devices & Circuits
- ECE 157 – Biological Signal Processing
- ECE 158 – Intro to Optimal Control & Estimation
- ECE 173 – Intro to Electronic & Photonic Dev
- ECE 177 – Micro Fabrication Laboratory
- ES 159 – Intro to Robotics
- ES 170 – Engineering Quantum Mechanics
- ES 176 – Intro to MEMS

**Engineering Electives** *(Incomplete List)*

*For courses that are co-listed in another department, students must enroll in the Engineering Sciences offering. ESE 6 and ES 53 can only be taken for concentration credit during freshman or sophomore year*

- CS 51 – Abstraction & Design in Computation
- CS 1240 – Data Structures & Algorithms
- CS 1750 – Computer Graphics
- CS 1790 – Design of Usable Interactive Sys
- CS 1810 – Machine Learning
- CS 1820 – Artificial Intelligence
- CS 1870 – Computational Linguistics
- ES 51 – Computer Aided Machine Design
- ES 53 – Quant Physiology or Bioengineering
- ES 111 – Intro to Scientific Computing
- ES 115 – Mathematical Modeling
- ES 120 – Intro to the Mechanics of Solids
- ES 121 – Intro to Optimization
- ES 125 – Mechanical Systems
- ES 190 – Intro to Materials Sci & Eng
- ES 231 – Energy Technology
- ESE 6 – Intro to Environmental Sci & Eng
- ESE 160 – Space Science & Engineering
- ESE 166 – State of the Art Instrument in Env Sci

**Prerequisite Planning Table for the Electrical Engineering SB**

| | Typically Offered | Math | Chemistry | Physics | Other |
|---|---|---|---|---|---|
| *Required Courses* | | | | | |
| ECE 141 | Fall | | | | *CS 50* |
| ECE 150 | Spring | **21a, Co: 21b** | | | |
| ECE 152 | Fall | **1a,b** | | **Co: B** | |
| ECE 155 | Fall | **1a,b** | | | |
| ECE 156 | Spring | **21a,b** | | | |
| ES 55 | Fall & Spring | | | | **Prior ES100** |
| ES 100HF | Fall-Spring | | | | **ES 55** |
| *Selected Electives* | | | | | |
| AP 195A | Fall | | | *A,B,C* | *Quant Mech* |
| BE 128 | Spring | **1b** | | **B** | |
| BE 129 | Spring | | | | *ECE 50/152* |
| BE 130 | Spring | | | | |
| BE 131 | Fall | | | | *ECE 50/152 & LS* |
| CS 61 | Fall | | | | *CS 50* |
| CS 1280 | Spring | *21a,b* | | | *Python* |
| CS 1430 | Spring | | | | *CS 50* |
| CS 144r | Spring | | | | *CS 51, 1430, 1810* |
| CS 1840 | Fall | **21b** | | | **ECE 150** |
| CS 1890 | Spring | | | | *CS 51* |
| CS 2490r | Fall | | | | |
| ECE 50 | Spring | | | | |
| ECE 143 | Fall | *21b* | | | *CS 51 or 61* |
| ECE 145 | Spring | **21b** | | **B** | |
| ECE 146 | Spring | | | | **ECE 141** |
| ECE 148 | Spring | | | | **ECE 141** |
| ECE 151 | Spring | **21a** | | **A,B** | |
| ECE 154 | Spring | | | | *ECE 152* |
| ECE 157 | Fall | **21a,b** | | | *ECE 150 or 156* |
| ECE 158 | Spring | | | | *ECE 155* |
| ECE 173 | Fall | **1b** | | **A,B** | |
| ECE 177 | Spring | | | **A,B** | |
| ES 159 | Spring | **21a,b** | | **A** | *CS 50* |
| ES 170 | Spring | **21a,b** | | | |
| ES 176 | Fall | | | **A,B** | *LS 1a or PS 1* |

[1]Courses listed as Recommended Preparation, and not an enforced prerequisite, are shown in italics

[2]Courses marked with a "Co:" may be taken as a co-requisite

[3]Equivalent courses are accepted for prerequisites (e.g., Phys 15a, PS 12a, or AP50a all count for Physics A)