

Plan of Study for the Electrical Engineering SB Concentration

Effective for Students Declaring the Concentration after July 1, 2025

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

REQUIRED COURSES	Selected Courses
Computer Science (1 course) CS 32 – Computational Thinking & Problem Solving CS 50 – Intro to Computer Science CS 51 – Abstraction and Design in Computation CS 61 – Systems Programming & Machine Organization	
Electrical Engineering Core (4 courses) ES 152 – Circuits, Devices, and Transduction CS 1410 – Computing Hardware ES 155 – Systems and Control ES 156 – Signals and Communications	
Electrical Engineering Electives (3 courses, see list on page 3) 1. 2. 3.	
Engineering (or Additional Electrical) Electives (2 courses, see list on page 3) 1. 2.	
Engineering Design (2 courses) ES 96 or ES 105 hfr (4 credits are required for ES 105 hfr)* ES 100hf – Engineering Design Projects	

No more than three of Engineering Sciences 6, 50, 51, and 53 can count toward concentration credit

** ES 96 or ES 105 hfr must be taken in the junior year, prior to taking ES 100hf to count for the junior design requirement*

Student Signature

Date: _____

Associate Director of Undergraduate Signature

Date: _____

This plan does/does not meet the ABET distribution requirements

Date: _____

Student Affairs Office

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

ES 50 can only be taken for concentration credit during freshman or sophomore year. Not more than two from: ES 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 144r – Networks Design Projects
- CS 1411 – Computer Architecture
- CS 1480 – Design of VLSI Circuits & Systems
- CS 1840 – Intro to Reinforcement Learning
- CS 1890 – Autonomous Multi-Robot Systems
- CS 2490r – Tiny Machine Learning
- ES 50 – Intro to Electrical Engineering
- ES 143 – Computer Vision
- ES 151 – Applied Electromagnetism
- ES 153 – Laboratory Electronics
- ES 154 – Electronic Devices & Circuits
- ES 157 – Biological Signal Processing
- ES 158 – Intro to Optimal Control & Estimation
- ES 159 – Intro to Robotics
- ES 170 – Engineering Quantum Mechanics
- ES 173 – Intro to Electronic & Photonic Dev
- ES 175 – Photovoltaic Devices
- ES 176 – Intro to MEMS
- ES 177 – Micro Fabrication Laboratory

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 179 – Design of Usable Interactive Sys
- CS 1810 – Machine Learning
- CS 1820 – Artificial Intelligence
- CS 1870 – Computational Linguistics
- ESE 6 – Intro to Environmental Sci & Eng
- ESE 117 – Intro to Geospatial Analysis
- ES 51 – Computer Aided Machine Design
- ES 53 – Quant Physiology or Bioengineering
- ES 105hfr – Humanitarian Design Projects (4 credits required)
- ES 111 – Intro to Scientific Computing
- ES 115 – Mathematical Modeling
- ES 121 – Intro to Optimization
- ES 120 – Intro to the Mechanics of Solids
- ES 125 – Mechanical Systems
- ESE 160 – Space Science & Engineering
- ESE 166 – State of the Art Instrument in Env Sci
- ES 190 – Intro to Materials Sci & Eng
- ES 231 – Energy Technology

Prerequisite Planning Table for the Electrical Engineering SB

	Typically Offered	Math	Chemistry	Physics	Other		
Required Courses							
ES 150	Spring	21a, Co: 21b		Co: B	CS 50		
ES 152	Fall						
CS 1410	Fall	1a,b					
ES 155	Fall						
ES 156	Spring	21a,b			Junior Year ES 96		
ES 96	Fall & Spring						
ES 100HF	Fall-Spring						
Selected Electives							
AP 195A	Fall	1b		A,B,C	Quant Mech		
BE 128	Spring			B			
BE 129	Spring						
BE 130	Spring						
BE 131	Fall					ES 50/152 & LS	
CS 61	Fall						
CS 1280	Spring			21a,b	Python		
CS 1430	Spring				CS 50		
CS 144r	Spring				CS 51, 143, 181		
CS 1411	Spring						
CS 1480	Spring						
CS 1840	Fall				21b	ES 150	
CS 1890	Spring				CS 51		
CS 2490r	Fall						
ES 50	Spring						
ES 143	Fall					21b	
ES 151	Spring					21a	
ES 153	Bracketed			A,B			
ES 154	Spring						
ES 157	Fall					21a,b	ES 150 or 156
ES 158	Spring						ES 155 121
ES 159	Spring	21a,b		A	CS 50		
ES 170	Spring	21a,b		A,B			
ES 173	Fall	1b					
ES 175	Spring					A,B	ES 173
ES 176	Fall					A,B	LS 1a or PS 1
ES 177	Spring			A,B			

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

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

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