Santa Clara University

Electrical and Computer Engineering Group Advising

Spring 2026

Santa Clara University

ELEN 4-year plan – Year 1 and 2

Bachelor of Science in Electrical Engineering

Student Planning Guide

	Fall	Winter	Spring
FIRST YEAR	MATH 11 Calculus I	MATH 12 Calculus II	MATH 13 Calculus III
	CHEM 11 Chemistry I	PHYS 31 Physics for Engineers I	PHYS 32 Physics for Engineers II
	ENGR 1/1L Intro to Eng. (2 units)	ECEN 20 Emerging Areas in Electrical Engineering	ECEN 21 Introduction to Logic Design
	Critical Thinking and Writing I	Critical Thinking and Writing II	University Core
	Culture and Ideas I	Culture and Ideas II	
	Fall	**Winter**	**Spring**
SOPHOMORE	ECEN 50 Circuits I	ECEN 100 Circuits II	ECEN 115 Electronics Circuits I
	CSEN 10 Intro to Programming	CSEN 11 Advanced Programming	CSEN 12 Data Structures
	MATH 14 Calculus IV	AMTH 106 Differential Equations	ECEN 110 Linear Systems
	PHYS 33 Physics for Engineers III	PHYS 34 Physics for Engineers IV/ Math 51 Discrete Math	University Core - RTC 1 (Note 1)

ECEN 4-year plan – Year 1 and 2

Bachelor of Science in Electrical and Computer Engineering

Student Planning Guide

	Fall	Winter	Spring
FIRST YEAR	MATH 11 Calculus I	MATH 12 Calculus II	MATH 13 Calculus III
	CHEM 11 OR Univ. Core	PHYS 31 Physics for Engineers I	PHYS 32 Physics for Engineers II
	CSEN 10 Introduction to Programming	CSEN 11 Advanced Programming	CSEN 12 Data Structures
	ENGR 1 Intro to Eng. (2 unit)	ECEN 20 Emerging Areas	ECEN 21 Introduction to Logic Design
	Critical Thinking and Writing I	Critical Thinking and Writing II	
SOPHOMORE	**Fall**	**Winter**	**Spring**
	ECEN 50 Circuits I	ECEN 100 Circuits II	ECEN 115 Electronics
	ECEN 120 Microprocessor System Design	ECEN 122 Computer Architecture	ECEN 121 Real-time Embedded Systems
	MATH 14 Calculus IV	AMTH 106 Differential Equations	Math 51 Discrete Math
	Cultures and Ideas I	Cultures and Ideas II	University Core - RTC 1 (Note 1)

ELEN 4-year plan – Year 3 and 4

	Fall	Winter	Spring
JUNIOR	ECEN 104 Electromagnetics I	MECH 121 Thermodynamics	ECEN 192 Intro to Sr. Design (1 unit) ECEN 192L- Lab (1 unit)
	ECEN 120 Microprocessor System Design	Math Science Elective (Note 2)	AMTH 108 Probability and Statistics
	ECEN Elective 1 (Note 3)	ECEN Elective 2 (Note 3)	ECEN Elective 3 (Note 3)
	University Core - Ethics (Note 1)	ENGL 181 Eng. Comm. (4 units)	Professional Development (Note 4)
	Fall	**Winter**	**Spring**
SENIOR	ECEN 194 Design Project I (2 units)	ECEN 195 Design Project II (2 units)	ECEN 196 Design Project III (1 unit)
	ECEN Elective 4 (Note 3)	ECEN Elective 5 (Note 3)	Optional Elective or BS/MS option (Note 5)
	Optional Elective or BS/MS option (Note 5)	Optional Elective or BS/MS option (Note 5)	Optional Elective or BS/MS option (Note 5)
	University Core	University Core	University Core

Humanities & Social Science | Math & Science | Major | Technical Electives

If a **study abroad** or **COOP** experience is selected in the junior year, courses may be moved to senior year.

ECEN 4-year plan – Year 3 and 4

	Fall	Winter	Spring
JUNIOR	AMTH 108 Probability and Statistics	CSEN 177 Operating Systems	ECEN 133 Digital Signal Processing
	PHYS 33 Physics for Engineers III	Math 53 Linear Algebra	ECEN 142 Communications and Networks
	ENGL 181 Eng. Comm. (4 units)	University Core - Ethics (Note 1)	ECEN 192 Intro to Sr. Design (1 unit) ECEN 192L- Lab (1 unit)
	ECEN Elective 1 (Note 3)	ECEN Elective 2 (Note 3)	ECEN Elective 3 (Note 3)
	Fall	**Winter**	**Spring**
SENIOR	ECEN 194 Design Project I (2 units)	ECEN 195 Design Project II (2 units)	ECEN 196 Design Project III (1 unit)
	Math Science Elective (Note 2)	Professional Development (Note 4)	Optional Elective or BS/MS option (Note 5)
	ECEN Elective 4 (Note 3)	Optional Elective or BS/MS option(Note 5)	Optional Elective or BS/MS option (Note 5)
	University Core	University Core	University Core

Humanities & Social Science | Math & Science | Major | Technical Electives

If **study abroad** or **COOP** experience is selected in the junior year, courses may be moved to senior year.
Minimum requirement of units for Electrical and Computer Engineering Degree is **191 units.**

ENGR1

Required for all students.

If transferred in after first year take ENGR 110 instead.

Offered every quarter.

ECEN 20

Required for first and second year

Juniors and Seniors – Take ECEN 200 offered every winter

Or take a course on emerging topics in the graduate program approved by advisor.

Math Science Elective - ELEN majors

May be one of the following:

CHEM 12: General Chemistry II

PHYS 113: Advanced Electromagnetism and Optics

PHYS 121: Quantum Mechanics I

MATH 53: Linear Algebra

MATH 105: Theory of Functions of a Complex Variable

MATH 123: Probability and Statistics II

Math Science Elective - ECEN majors

May be one of the following:

CHEM 11: General Chemistry I

CHEM 12: General Chemistry II

PHYS 34: Physics for Scientists and Engineers IV

PHYS 113: Advanced Electromagnetism and Optics

PHYS 121: Quantum Mechanics I

MATH 105: Theory of Functions of a Complex Variable

MATH 123: Probability and Statistics II

Electives – ELEN Majors

- Five 100-level electives
- One elective must be selected from at least four of the five areas.
  - IC Design: ECEN 116, 151, 152, 153, 156
  - Systems: ECEN 130, 132, 133, 158, 160, 161
  - RF and Communication: ECEN 105, 141, 142, 144
  - Power Systems: ECEN 164, 183, 184
  - Digital and Embedded Systems: ECEN 121, 122, 123, 127, 131, 162, 180

Electives – ECEN Majors

- Four undergraduate ELEN 100-level elective courses:
- At least two electives must be selected from group D – “Digital and Embedded Systems”. ECEN 123, 127, 131, 162, 180.
- Either CSEN 79 or CSCI 163 may be substituted for one of the ECEN electives.
- Two additional undergraduate ECEN 100-level elective courses.
- With advisor approval at **most** one may be selected from CSEN courses.

Required Course Offerings 2026-27

Required classes	Course Number	Fall	Winter	Spring	Summer
Emerging Areas	ECEN 20		x		
Digital Logic Design	ECEN 21	x	x	x	x
Electric Circuits I	ECEN 50	x	x	x	x
Electric Circuits II	ECEN 100	x	x		x
Electromagnetics I	ECEN 104	x			
Linear Systems	ECEN 110			x	
Electronic Circuits	ECEN 115		x	x	
Microprocessor System Design	ECEN 120	x	x		
Real-time Embedded Systems	ECEN 121			x	
Computer Architecture	ECEN 122		x	x	
Digital Signal Processing	ECEN 133	x		x	
Communications and Networking	ECEN 142			x	
Introduction to Senior Design	ECEN 192			x	
Electronics Prototyping	ECEN 192L			x	
Design project I	ECEN 194	x			
Design project II	ECEN 195		x		
Design project III	ECEN 196			x	

Elective Course Offerings 2026-28

Technical Electives	Course Number	Fall 26	Winter 27	Spring 27	Fall 27	Winter 28	Spring 28	Fall 28	Winter 29	Spring 29
RF and Communications (C)										
Electromagnetics I	ECEN 104**	x			x			x		
Electromagnetics II	ECEN 105		x			x			x	
Communications and Networking	ECEN 142*			x			x			x
Microwave Circuit Analysis and Design	ECEN 144/706						x			
Senior Level										
Communication Systems	ECEN 141					x			x	
Graduate courses open to seniors										
Electromagnetic Field theory	ECEN 201	x			x			x		
Antennas and Wave Propagation	ECEN 715E			x						x
Power Systems (P)										
Power Electronics	ECEN 164	x			x			x		
Power Systems	ECEN 183		x			x			x	
Senior Level										
Power Systems Stability and Control	ECEN 184			x						x
Graduate courses open to seniors										
Smart Grid	ECEN 285		x			x			x	
Introduction to Wind Energy	ECEN 286	x			x			x		
Introduction to storage systems	ECEN 287			x			x			x
Introduction to Sustainable Energy	ECEN 280	x			x			x		

+ Every two years
* Required for ECEN, Cannot be used as elective.
** Required for ELEN .Cannot be used as elective.

Course Offerings 2026-28

Technical Electives	Course Number	Fall 26	Winter 27	Spring 27	Fall 27	Winter 28	Spring 28	Fall 28	Winter 29	Spring 29
IC Design (I)										
Analog IC Design	ECEN 116		x		x			x		
Semiconductor Devices	ECEN 151 (267)					x				
Integrated Circuit Fabrication Technology	ECEN 152 (276)						x			
Digital IC Design	ECEN 153	x	x	x	x	x	x	x	x	x
Introduction to Nanotechnology	ECEN 156									
Graduate courses open to seniors										
VLSI Design I	ECEN 387	x			x			x		
Analog IC Design II	ECEN 253			x			x			x
Systems (S)										
Linear Systems	ECEN 110**			x			x			x
Design of Assistive Technologies	ECEN 132				x					
Digital Signal Processing	ECEN 133*	x		x	x		x	x		x
Introduction to Neuromorphic computing and Mem-device Computing	ECEN 158		x			x			x	
Chaos Theory, Metamathematics and the Limits of Knowledge	ECEN 160	x			x			x		
The Beauty of Nature and the Nature of Beauty	ECEN 161									
Senior Level										
Control Systems	ECEN 130	x			x			x		
Graduate courses open to seniors										
Introduction to Machine Learning	ECEN 520	x		x	x		x	x		x

+ Every two years
* Required for ECEN, Cannot be used as elective.
** Required for ELEN .Cannot be used as elective.

Course Offerings 2026-28

Technical Electives	Course Number	Fall 26	Winter 27	Spring 27	Fall 27	Winter 28	Spring 28	Fall 28	Winter 29	Spring 29
Digital and Embedded Systems (D)										
Real-time Embedded Systems	ECEN 121*			x			x			x
Computer Architecture	ECEN 122*		x	x		x	x		x	x
Mechatronics	ECEN 123		x			x			x	
Advanced Logic Design	ECEN 127	x			x			x		
Introduction to Robotics	ECEN 131			x			x			x
Quantum &Parallel Algorithms for Scientific Computing	ECEN 162		x			x			x	
Graduate courses open to seniors										
Embedded Systems/Lab	ECEN 501/L	x			x			x		
Advanced Computer Architecture	ECEN 511	x			x			x		
Hardware Acceleration for Machine Learning	ECEN 529			x			x			x
Logic Design using HDL	ECEN 603		x		x			x		

+ Every two years
* Required for ECEN, Cannot be used as elective.
** Required for ELEN .Cannot be used as elective.

Professional Development

- Four or more units in **study abroad** program that does not duplicate other coursework.
- Three units in **ENGR 110**.
- Preparation for graduate study in electrical engineering with completion of two or more additional units of upper-division or graduate-level courses.
- Completion of an **approved minor or second major** in any field of engineering or science.
- Two units of Peer education experience – ECEN 193
- Two units of undergraduate research, ECEN 199
- Cooperative education experience- ECEN 188/ECEN 189.
- Completion of 10 or more units in the combined bachelor of science and master of science program