



COMPUTER ENGINEERING

PROGRAM DESCRIPTION

Computer engineers learn to integrate a variety of skills, knowledge and expertise at the intersection of hardware and software. The computer engineering program attracts people from diverse backgrounds, promotes a sense of support and inclusion, encourages whole-person engagement and development, and nurtures reflective engineering practice. Our graduates are valued for their diversity in body and voice, their ability to negotiate complexity and ambiguity, and their capacity and agency to make a positive impact on society.

OUR MISSION

The mission of the computer engineering program is to provide students with a well-rounded education encompassing the theory and practice, and the ability to navigate, the complex, integrated nature of computer engineering so that graduates will be well positioned to creatively and collaboratively respond to the complex challenges facing the world and to innovate in ways that serve the pressing needs of society.



in computer engineering in the nation
as ranked by U.S. News & World Report
(2020)



CPE

459
undergraduate
students

enrolled in
computer
engineering

38
graduate
students

enrolled in the
blended B.S. and M.S.
programs

CONCENTRATIONS

Current areas of specialization include:

- Autonomous Systems
- Edge Computing and the Internet of Things
- Self-Adapting and Self-Healing Systems
- System on a Chip
- Embedded Systems
- Ethical Computing, Security, and Privacy
- Computer Architecture
- Parallel and Distributed Systems
- Computer Networks

ASSOCIATED CLUBS

- **Color Coded (Diversity in Tech)**
— colorcoded.cc
- **Computer Engineering Society**
— cpes.calpoly.edu
- **IEEE Student Branch**
— calpolyieee.com
- **Society of Women Engineers**
— swe.calpoly.edu
- **Roborodentia**
— cpe.calpoly.edu/clubs/roborodentia-club
- **Women Involved in Software & Hardware (WISH)**
— calpoly.edu/~wish



B.S. IN COMPUTER ENGINEERING

Suggested Four-year Academic Flowchart • 2022-2026 Catalog

Updated 7/6/2022

FRESHMAN			SOPHOMORE			JUNIOR			SENIOR			
Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	
Computer Engineering Orientation CPE 100 (1)	Fundamentals of Computer Science CPE/CSC 101 (4) *	Data Structures CPE/CSC 202 (4) (CPE/CSC 101 w/min C- or Instr. Consent)	Computer Design and Assembly Language Programming CPE/EE 233 (4) (CPE/EE 133)	Project-Based Object-Oriented Programming & Design CPE/CSC 203 (4) (CPE/CSC 202 w/min C- or Instr. Consent)	Computer Architecture Course: CPE 315 (4) OR CPE 333 (4) *	Signals and Systems Course: CPE 327 (3) & CPE 367 (1) OR EE 228 (4) *	Introduction to Operating Systems CPE/CSC 453 (4) (CSC/CPE 357; CSC 225, CPE/EE 229, or CPE/EE 233)					
Introduction to Computing CPE/CSC 123 (4)¹ (Basic computer literacy)		Digital Design CPE/EE 133 (4)³ (CPE 100 & CPE/CSC 101)	Electrical & Electronic Circuits & Lab I EE 115 (3) AND EE 145 (1) (MATH 141, Coreq: CHEM 124† & PHYS 143†)	Electrical & Electronic Circuits & Lab II EE 215 (3) AND EE 245 (1) (EE 115)	Systems Programming CPE/CSC 357 (4) *		Introduction to Computer Networks CPE 464 (4) (CSC/CPE 357. Recommended: STAT 312, 321, or 350)			Approved Technical Elective (4)^{4,6} ***		
General Chemistry for Physical Science & Engineering I CHEM 124 (4)² (MATH 118 or 330; Recom: HS Chemistry) [B1 & B3]	General Physics I PHYS 141 (4)² [MATH 141 w/min C-; MATH 142 or 182†] [Area B Elective]		General Physics III PHYS 143 (4) (PHYS 141; MATH 142; Recom: MATH 241)	General Physics II PHYS 142 (4) (PHYS 141; MATH 142 or 182)	Electrical & Electronic Circuits III EE 315 (4) (CPE/EE 133 & EE 215)	Approved Technical Elective (4)^{4,6} ***	Choose a Security Course: CPE 321, CPE 422, or CPE 426 (4) *			Capstone I CPE 350 (4)⁵ (CPE 316† or EE 329†)	Capstone II CPE 450 (3)⁵ (CPE 350)	
Calculus I MATH 141 (4)² * [B4]	Calculus II MATH 142 (4)² (MATH 141 w/min C- or Instr. Consent) [B4]	Calculus III MATH 143 (4)² (MATH 142 w/min C- or Instr. Consent) [Area B Elective]	Calculus IV MATH 241 (4) (MATH 143)	Linear Analysis I MATH 244 (4) (MATH 143)	Choose a Philosophy Course: ² PHIL 230 (4) OR PHIL 231 (4) (GE Area A w/min C-) [C2]		Microcontrollers Course: CPE/EE 329 or CPE 316 (4) *			Choose One Series: ⁴ Senior Project I & II CPE 461 (3) (CPE 350) OR CPE 462 (2) (CPE 450) OR Research Senior Project I & II CSC 497 (2) (CSC 307 or 309; Instr. Consent) OR CSC 498 (2) (CSC 497; Instr. Consent)		
Oral Communication COMS 101 or 102 (4)** [A1] Can be taken anytime during Freshman Year			Calculus III MATH 143 (4)² (MATH 142 w/min C- or Instr. Consent) [Area B Elective]		Choose an Ethics Course: ² PHIL 323 (4), PHIL 327 (4), PHIL 328 (4), PHIL 339 (4), or PHIL 340 (4)* [Upper-Division C]		Choose an Ethnic Studies Course: ES 350 (4) or ES 351 (4) *			Probability and Random Processes for Engineers STAT 350 (4)² * [Upper-Division B]	Approved Technical Elective (4)^{4,6} ***	
Expository Writing ENGL 133 or 134 (4)** [A2] Can be taken anytime during Freshman Year							Choose an Ethnic Studies Course: ES 350 (4) or ES 351 (4) *				Approved Technical Elective (4)^{4,6} ***	
							Graduation Writing Requirement GWR* (Students can attempt to fulfill the requirement after 90 earned units; students should complete the requirement before senior year)				Approved Technical Elective (4)^{4,6} ***	
							Graduation Writing Requirement GWR* (Students can attempt to fulfill the requirement after 90 earned units; students should complete the requirement before senior year)				Approved Technical Elective (4)^{4,6} ***	
							Graduation Writing Requirement GWR* (Students can attempt to fulfill the requirement after 90 earned units; students should complete the requirement before senior year)				Approved Technical Elective (4)^{4,6} ***	
17	16	16	16	16	16	16	15	16	16	17-18	14	
										TOTAL:	191-192	

Notes:

MOST GENERAL EDUCATION COURSES CAN BE TAKEN IN ANY ORDER AS LONG AS PREREQUISITES ARE MET

* Refer to current catalog for prerequisites.

** One course from each of the following GE areas must be completed: A1, A2, A3, C1, C2, Lower-Division C Elective, Upper-Division C, D1, Area D Elective, Lower-Division E, & F. Upper-Division C should be taken only after Junior standing is reached (90 units).

Refer to online catalog for GE course selection, United States Cultural Pluralism (USCP) and Graduation Writing Requirement (GWR).

USCP requirement can be satisfied by some (but not all) courses within GE categories: C1, Upper-Division C, D1, D2, Upper-Division D, or E.

*** Refer to current catalog for course selection and restrictions.

Course subject is also Home Department designation, unless noted in red.

† Course can be taken previously or concurrently.

¹ An additional 4 units of Approved Technical Electives may be substituted, although new students are strongly encouraged to take CSC/CPE 123.

² Required in Major/Support; also satisfies GE.

³ CPE 133 is often offered as 100% online courses during the summer.

⁴ Consultation with advisor is recommended prior to selecting Approved or Technical Electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals. No double-counting with other degree requirements.

⁵ ENGR 459, 460, 461, & CPE 400 (7), or ENGR 463, 464, 465, & CPE 400 (7) may substitute for CPE 350 and CPE 450 (7).

⁶ The following courses may not be used to satisfy this requirement: COOP units; BUS 499; CSC 304, 320, 364, CSC 400, CSC 500; EE 321, EE 322, EE 361, EE 400, EE 460, EE 500, EE 563. A student with credit in CPE 327/367 cannot take EE 328/368 for credit.

Legend:

Course Title		
Course # (Units)		Major (99-100)
(Prerequisite)		Support (52)
[GE Area]		General Ed. (40)