

MAJOR IN COMPUTER ENGINEERING, ROBOTICS AND AUTOMATION CONCENTRATION

requires a cumulative grade point average of at least 2.000 in Electrical Engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. ECE courses required for the major at the 100, 200, and 300 level must be passed with a minimum grade of C (2.000); grades below a C will require the student to retake the course. ECE courses designated as an elective are exempt from the C or higher minimum grade requirement.

Requirements Effective Fall 2026

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ENGR 111	Fundamentals of Engineering		3
ENGR 114	Engineering for Grand Challenges		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one group from the following: ¹			7
Group A			
CS 150B	Culture and Coding: Python	3B	
CS 164	CS1—Computational Thinking with Java		
Group B			
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	
CS 164 or 163	CS1—Computational Thinking with Java CS1—No Prior Programming Experience		
Group C			
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	
CS 152	Python for STEM		
CS 162	CS1—Introduction to Java Programming		
Total Credits			29

Sophomore

CS 165	CS2—Data Structures		4
ECE 205	Analog Circuits I		3
ECE 206	Analog Circuits II		3
ECE 232	Introduction to Project Practices		1
ECE 252	Introduction to Digital Circuits		3
ECE 253	Microcontrollers and C for Internet-of-Things		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Intro to Ordinary Differential Equations		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Total Credits			33

Junior

CS 214	Software Development		3
CS 220	Discrete Structures		4
CT 301	C++ Fundamentals		2
ECE 303/STAT 303	Introduction to Communications Principles		3
ECE 311	Linear System Analysis I		3
ECE 312	Linear System Analysis II		3
ECE 450	Digital System Design Laboratory		1
ECE 451	Digital System Design		3
ECE 452	Computer Organization and Architecture		3
JTC 300 or CO 301B	Strategic Writing and Communication (GT-CO3)	2	3
	Writing in the Disciplines: Sciences (GT-CO3)		
Select a minimum of 3 credits from the following:			3
DSCI 369	Linear Algebra for Data Science		
MATH 369	Linear Algebra I		
Total Credits			31

Senior

ECE 401	Senior Design Project I	4A,4B	3
ECE 402	Senior Design Project II	4C	3
ECE 411	Control Systems		3
Select one course from the following:			4
ECE 456	Computer Networks		
ECE 528/CS 528	Embedded Systems and Machine Learning		
Technical Electives (see list below)			11
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			3B
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			3D
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)			3C
Total Credits			33
Program Total Credits:			126

Technical Electives

Code	Title	Credits	
CS 345	Machine Learning Foundations and Practice	3	
CS 356	Systems Security	3	
CS 445	Introduction to Machine Learning	4	
ECE 412	Digital Control and Digital Filters	3	
ECE 455	Introduction to Robot Programming/ Simulation	3	
ECE 456	Computer Networks ²	4	
ECE 463	Electrical Motors and Generators	4	
ECE 528/CS 528	Embedded Systems and Machine Learning ²	4	
ECE 529	Signal Processing & Artificial Intelligence	3	
ECE 561/CS 561	Hardware/Software Design of Embedded Systems	4	
MECH 415	Rotorcraft Modeling and Control	3	
MECH 416	Introduction to Robotic Manipulators	3	
MECH 564	Fundamentals of Robot Mechanics and Controls	3	

¹ Recommended sequence for most incoming students is Group A: CS 150B to CS 164.

² Course may count as a Technical Elective ONLY when not taken as part of the major requirements. The course cannot count as credit toward both major and technical elective requirements.