Computer Engineering

Mission Statement

The mission of the School of Electrical, Computer, and Biomedical Engineering is to serve society as a center for learning and innovation in all major areas of electrical, computer, and biomedical engineering. The School accomplishes its mission by disseminating existing knowledge through teaching, creating new knowledge through research and publications, and by converting original ideas and concepts into new technologies. Through the integration of education and research, the School creates the academic environment necessary for training innovators and leaders for the future.

Bachelor of Science (B.S.) in Computer Engineering

The fundamental goal of the undergraduate program in Computer Engineering is to offer a high-quality education, designed to achieve the following specific educational objectives:

Educational Objectives

Within a few years of graduation, Computer Engineering graduates are expected to attain:

1. Increasing responsibility beyond that in their entry-level description in job functions within Computer Engineering or related employment, and/or
2. Successful progress within graduate degree programs in Computer Engineering or other professional degrees such as other Engineering, Business, Law or Medicine, and
3. Continued successful professional development and adaptation to evolving technologies within their chosen field.

In the computer engineering curriculum the students can choose courses in:

1. **Computer Hardware Design**: Design and evaluation of integrated circuits, configurable hardware, embedded systems hardware, computer architectures. Relevant courses: ECE 422, ECE 423, ECE 424, ECE 425, ECE 426, ECE 427, ECE 428, and ECE 429.
2. **Software Systems Software**: Algorithms and software development for digital integrated circuits, embedded systems software, microcontroller programming, multicore programming, machine learning and artificial intelligence, hardware-software codesign, and networks.

Employment opportunities exist within a wide range of organizations, such as computer, semiconductor, aviation, electronics, microelectronics, broadcasting, telecommunications, defense, automotive, manufacturing and electric power companies, state and federal agencies and laboratories. Employment opportunities cover the spectrum of engineering activities, ranging from research and development, to systems analysis, automation, manufacturing, customer service and support, marketing, and sales.

The undergraduate program in Computer Engineering is accredited by the Engineering Accreditation Commission of ABET, abet.org.

B.S. Computer Engineering Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Foundation Skills	13
CMST 101	3

Degree Requirements	Credit Hours	
ENGL 101, ENGL 102	6	
MATH 150 (3 credits out of 4)	3	
UNIV 101	1	
Disciplinary Studies		23
Fine Arts	3	
BIOL 202	2	
Humanities	6	
PHYS 205A	3	
PHYS 205B	3	
Social Science	6	
Integrative Studies (Multicultural/Diversity)		3
Requirements for Computer Engineering Major		87
Basic Science		
PHYS 255A, PHYS 255B	2	
Science Elective (with lab) [1]	4	
Mathematics		
MATH 150, (1 credit out of 4) MATH 250, MATH 251, MATH 305	11	
ECE Required Courses: ECE 222, ECE 235, ECE 235L, ECE 296, ECE 296L, ECE 315, ECE 321, ECE 321L, ECE 327, ECE 327L, ECE 329, ECE 329L, ECE 345, ECE 345L, ECE 355, ECE 355L, ECE 495C, ECE 495D		41
Technical Electives [2]		29
ECE Technical Electives [3]	23	
General Technical Electives [4]	6	
Total		126

[1] For Science Elective choose from biological, chemical, or physical science (CHEM 200 + CHEM 201, PHYS 305 + PHYS 355, PHSL 201 + PHSL 208)

<superscript>2</superscript> *At least 20 hours from the following list: ECE 412-435, two approved CS courses from CS 3XX or 4XX level (except CS 300, CS 393, or CS 493)*

<superscript>3</superscript> *Approved by the School. Approved ECE technical electives: ECE 3XX or 4XX level (except ECE 392, ECE 492 & ECE 493)*

<superscript>4</superscript> *Approved by the School. Approved General technical electives: ECE 3XX or ECE 4XX level (except ECE 493); CHEM 210; MATH 221, MATH 282, MATH 302, MATH 349, MATH 380, or MATH 4XX level (except MATH 411, MATH 412); CS 3XX or 4XX level (except CS 300, CS 393, or CS 493); ENGR 2XX, ENGR 3XX, 4XX (except ENGR 222, ENGR 296, ENGR 335), ENGR 3XXi (if not already counted toward the student's core requirement); BME 485; IMAE 470A*

Students interested in meeting the requirements of both the Electrical Engineering and the Computer Engineering degree programs may ask the advisement office for a guide suggesting how one may complete both in a timely manner.

B.S. Computer Engineering - Cyber Systems and Security Engineering Specialization Degree Requirements

Degree Requirements		Credit Hours
University Core Curriculum Requirements		39
Foundation Skills		13
CMST 101	3	
ENGL 101, ENGL 102	6	
MATH 150 (3 credits out of 4)	3	
UNIV 101	1	
Disciplinary Studies		23
Fine Arts	3	
BIOL 202	2	
Humanities	6	
PHYS 205A	3	
PHYS 205B	3	
Social Science	6	
Integrative Studies (Multicultural/Diversity)		3
Requirements for Computer Engineering Major		87
Basic Science		

Degree Requirements	Credit Hours	
PHYS 255A, PHYS 255B	2	
Science Elective (with lab) [1]	4	
Mathematics		
MATH 150 (1 credit out of 4) MATH 250, MATH 251, MATH 305	11	
ECE Required Courses: ECE 222, ECE 235, ECE 235L, ECE 296, ECE 296L, ECE 315, ECE 321, ECE 321L, ECE 327, ECE 327L, ECE 329, ECE 329L, ECE 345, ECE 345L, ECE 355, ECE 355L, ECE 495C, ECE 495D		41
Technical Electives [2]		29
ECE Technical Electives [3]	23	
General Technical Electives [4]	6	
Total		126

[1] *For Science Elective choose from biological, chemical, or physical science. (CHEM 200+201, PHYS 305+355, PHSL 201+208)*

[2] *At least 20 hours from the following list: ECE 412 -ECE 435, two approved CS courses from CS 3XX or 4XX level (except CS 300, 393, or 493). One of the following courses: ECE 434, CS 410. Only one of those courses will count towards specialization. At least one course from the following list: ECE 418, ECE 433, CS 408, CS 409, ECE 503, ECE 518, ECE 519. At least two courses from the following list: ECE 412, ECE 422, ECE 424, ECE 431, CS 415. At least two courses from the following list: ECE 417, ECE 419, ECE 428, ECE 430, ECE 475, CS 413, ECE 517, ECE 541.*

[3] *Approved by the Department. Approved ECE technical electives: ECE 3XX or 4XX level (except ECE 392, 492 & 493).*

[4] *Approved by the Department. Approved General technical electives: ECE 3XX or 4XX level (except ECE 493); CHEM 210; MATH 221, 282, 302, 349, 380, or 4XX level (except MATH 411, 412); CS 3XX or 4XX level (except CS 300, 301, 393, or 493); ENGR 2XX, 3XX, 4XX (except ENGR 222, 296, 335), ENGR3XXi (if not already counted toward the student's core requirement); BME 485; IMAE470A.*

Last updated: 03/13/2024