

COMPUTER ENGINEERING

Degree: Bachelor of Science in Computer Engineering
 Department: Electrical and Computer Engineering
 Building 70, Room 116
 (850) 474-2963
<http://uwf.edu/ece>
ece@uwf.edu
 College: Arts and Sciences
 Semester Hours Required for Degree: 129

Faculty: M. Rashid (Chairperson), E. Bakhoun, A. Fuchs, T. Gilbar, S. Gorman, D. Harrell, M. Islam, M. Khabou, R. Manseur, K.T. Rigby, B. Shaer, W. Weber

The mission of the Department of Electrical and Computer Engineering (ECE) is to offer baccalaureate degree programs in electrical and computer engineering which serve the needs of the West Florida region, the State, and the nation.

The goal of the baccalaureate degree program is to prepare students to embark upon a professional career in computer engineering or to begin graduate study.

Graduates will be known for the accomplishments in the early stage of their careers and they should:

- A. Develop computer engineering solutions individually and through interdisciplinary teams within a global and societal context.
- B. Professionally and ethically engage in technical or business activity through engineering ability, communication skills, and knowledge.
- C. Continue professional growth through post-graduate education, continuing education, or professional activity.
- D. Contribute to the Northwest Florida regional economic development.

The objective of the program leading to the degree of Bachelor of Science in Computer Engineering is to provide students with a strong theoretical and practical background in computer hardware and software, along with the engineering analysis, design, and implementation skills necessary to work between the two. A computer engineer is someone with the ability to design a complete computer system - from its circuits to its operating system to the algorithms that run on it. Although it is valid to look at software and hardware separately, a computer engineer must take a more holistic approach. If an electronic device is to be called a computer, it must produce mathematically meaningful results. Similarly, any useful theory of computing must be physically realizable. The synthesis of theory and algorithms, which must take place before any useful computing can be achieved, is the job of the computer engineer. To produce such engineers is the mission of this program.

Computer engineering deals with the body of knowledge that forms the theoretical and practical basis for the storage, retrieval, processing, analysis, recognition, and display of information. This area also includes the design

and implementation of computer systems and peripheral devices for information handling and engineering applications. The computer engineering curriculum provides a balance of hardware, software, and computer theory and applications with a basic background in electrical engineering. Ten hours of electives are included to permit a student to delve deeply into selected subject matter.

Computer engineers find career opportunities in a wide variety of companies or organizations involving the design, development, building, testing, and operation of computer systems. Computer engineers deal with both hardware and software (programming) problems. In designing a computer system, computer engineers must decide how much of the computer logic to put into hardware and how much to put into software. The work of the computer engineers and computer scientists is closely related. Computer engineers tend to be more involved with the computer hardware, whereas computer scientists tend to be more involved with the computer software and less emphasis on hardware.

Students who complete the program listed in previous University *Catalogs* before December 2008 participate in the UF/UWF Joint Program and receive their degrees from the University of Florida. Students completing the program after that date will earn their degrees from the University of West Florida.

PROGRAM REQUIREMENTS

Students must complete all seven common prerequisite courses with a grade of "C" or better in each technical course with an overall GPA of 2.3 (4.0 scale) by the term they are admitted. Laboratories are required for chemistry and both physics courses, but the grades are not considered in the technical GPA. Only the last attempt will be considered in computing the technical GPA for admission.

Students are required to have a laptop tablet PC. Students should check with the department for minimum hardware configurations.

In addition to general University requirements, students seeking the B.S. in Computer Engineering must meet the requirements listed below. A minimum course grade of "C" or better is required in all electrical engineering core courses (EEL 3111, 3112, 3135, 3304, 3396, and 3701), and in all computer science courses (COT, CEN, CIS or COP prefix) and all other electrical engineering courses which serve as prerequisites to EEL and CS courses and labs. A "C" or better is required in EGN 4410, EGN 4411L, ENC 3240, STA4321, and all Computer Science courses.

Students should consult with their academic advisor for courses which may satisfy both the General Studies requirements and common prerequisites.

The computer engineering curriculum is designed to yield 15 outcomes. Each upper division course within the curriculum contributes to at least one of these outcomes. A student must demonstrate each outcome achievement in at least two courses to satisfy the graduation requirements.

All seniors must complete an exit interview with their advisor and submit a copy of their senior design report before graduating.

General Studies (24 sh)

It is recommended that students take a course in literature, ECO 2013, EUH 1001, PHI 2603, fine arts, and behavioral science.

Common Prerequisites (27 sh)

State mandated common prerequisites must be completed prior to admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

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|------|--------|---|
| +CHM | 2045/L | General Chemistry I/Lab..... 4 [CHS X440, CHM X045/L] |
| +MAC | 2311 | Analytic Geometry & Calculus I..... 4 [MAC X311, X281, X282. MAC X283] |
| +MAC | 2312 | Analytic Geometry & Calculus II..... 4 [MAC X312, X282] |
| MAC | 2313 | Analytic Geometry & Calculus III..... 4 [MAC X313, X283] |
| MAP | 2302 | Differential Equations 3 [MAC X302] |
| +PHY | 2048/L | University Physics I/Lab 4 [PHY X048/L] |
| PHY | 2049/L | University Physics II/Lab 4 [PHY X049/L] |

+ Indicates common prerequisites which can be used to satisfy General Studies requirements.

Major (69 sh)

| | | |
|-----|--------|---|
| CEN | 3031 | Introduction to Software Engineering 3 |
| CIS | 3020 | Introduction to CIS..... 3 |
| COP | 3530 | Data Structures and Algorithms..... 3 |
| COP | 4600 | Operating Systems 3 |
| COT | 3100 | Applications of Discrete Structures..... 3 |
| EEL | 3111 | Circuits I..... 3 |
| EEL | 3112 | Circuits II..... 3 |
| EEL | 3135 | Discrete-Time Signals & Systems 3 |
| EEL | 3303L | Electric Circuits Laboratory..... 1 |
| EEL | 3304 | Electronic Circuits I..... 3 |
| EEL | 3396 | Solid-State Electronic Devices 3 |
| EEL | 3701/L | Digital Logic & Computer Systems/Lab 4 |
| EEL | 4304L | Electronics Laboratory..... 1 |
| EEL | 4712/L | Digital Design/Lab 4 |
| EEL | 4713/L | Digital Computer Architecture/Lab..... 4 |
| EEL | 4744/L | Microprocessor Applications/Lab..... 4 |
| EEL | 4834 | C++ Programming for Electrical Engineers .. 3 |
| EGM | 4313 | Intermediate Engineering Analysis 3 |
| EGN | 3203 | Engineering Software Tools 1 |
| EGN | 4034 | Professional Ethics 1 |
| EGN | 4410 | Capstone Design I..... 1 |
| EGN | 4411L | Capstone Design II..... 2 |
| | | Advisor approved EEL electives 10 |

Maximum of 3 sh in EEL 4949 and maximum of 3 sh in EEL 4905, and maximum of 6 sh in EEL 4905/4949 (combination). Consult the Department for the current list of approved EEL Elective courses.

Major-Related (9 sh)

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|-----|------|---|
| ENC | 3240 | Technical Writing..... 3 |
| STA | 4321 | Introduction to Mathematical Statistics I..... 3 |
| | | Advisor approved Engineering or Computer Science electives 3 |

Consult the department for the current list of approved technical elective courses

Upper Division Electives (0 sh)