

COMPUTER ENGINEERING

Degree: Bachelor of Science in
Computer Engineering
Department: Electrical and Computer Engineering
Building 70, Room 116
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<http://uwf.edu/ece>
ece@uwf.edu
College: Arts and Sciences
Semester Hours Required for Degree: 126

Faculty: M. Law (UF Chairperson), M. Rashid (Director), R. Avant, M. Bataineh, A. Fuchs, T. Gilbar, S. Gorman, D. Harrell, 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 either individually or 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 UWF/UF Joint Program in Electrical and Computer Engineering is a cooperative arrangement between the University of West Florida (UWF) and the University of Florida (UF). Courses are taught on the UWF Pensacola and Ft. Walton Beach campuses. The degree is awarded by UF and is identical to the one offered students on the Gainesville campus and is accredited by ABET (Accreditation Board for Engineering and Technology).

The transfer of the electrical and computer engineering programs from UF to UWF will be completed by December 31, 2008. Students graduating from this program after December 2008 will be awarded a UWF degree. All students graduating prior to December 31, 2008 will receive a degree from UF. Students who were admitted to UWF before August 8, 2004, and are not able to complete the degree requirements by December 31, 2008, will have the option of transferring to Gainesville for the completion of the degree from UF.

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. Seventeen 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.

PROGRAM REQUIREMENTS

The number of applicants who can be accepted is limited by the available classroom and laboratory space, laboratory facilities, and faculty. It is the department's policy to admit the best qualified applicants as demonstrated by high academic achievement within the enrollment limitations discussed above. Admission is directly tied to student's performance in physics and calculus courses, because subsequent work is intimately related to these disciplines. The currently accepted minimum requirements for admission to the program include completion of all eight common prerequisite courses with a grade of "C" or better in each, with an overall GPA of 2.5 (4.0 scale) in Physics courses, an overall GPA of 2.5 (4.0 scale) in Math courses, and an overall GPA of 2.5 (4.0 scale) in Chemistry I and either Chemistry II or Biology. Only the first two attempts (including withdrawals, drops, audits, etc.) will be considered in determining whether the minimum grade of "C" has been achieved and in calculating the overall GPA in common prerequisite areas. A student must be accepted into the program before the last 30sh are completed. During the semester prior to the graduation term, the student's record is officially transferred to Gainesville where it is reviewed to certify that the particular course selections satisfy all graduation requirements.

Effective fall 2006, 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 and labs (COT, CEN, CIS, CDA or COP prefix) which serve as prerequisites to other EEL and CS courses and labs. A "C" or better is required in EEL 4914C, ENC 3240, 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 fifteen 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.

Course descriptions are listed alphabetically by prefix in the back of this *Catalog*.

General Studies (30 sh)

Assumes Advanced Placement Credits in ENC 1101 and ENC 1102 by UF. Must include a course in literature, ECO 2013, EUH 1001, PHI 2603, and either a Fine Arts or Behavioral Science. PHI 2600 should not be taken.

Common Prerequisites (30 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.

+ CHM	2045/L	General Chemistry I/Lab	4	
		[CHS x440]		
+ MAC	2311	Analytic Geometry & Calculus I	4	
		[MAC x311, x281]		
+ MAC	2312	Analytic Geometry & Calculus II	4	
		[MAC 2312, x282]		
	MAC	2313	Analytic Geometry & Calculus III	4
			[MAC 2313, x283]	
	MAP	2302	Differential Equations	3
			[MAC x302]	
+ PHY	2048/L	University Physics I/Lab	4	
	PHY	2049/L	University Physics II/Lab	4

Choose one:

CHM	2046	General Chemistry II	3
		or Biological Science	3

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

Computer Requirement (3 sh)

CIS	3020	Introduction to CIS	3
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Major (60 sh)

CEN	3031	Introduction to Software Engineering	3
CDA	3101	Introduction to Computer Organization	3
COP	3530	Data Structure 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	4914C	Electrical Engineering Design	3
EGN	4034	Professional Ethics.....	1
EEL	electives	8

Maximum of 3 sh in EEL 4949 and maximum of 4 sh in EEL 4905, and maximum of 7 sh in EEL 4905/4949(combination). Consult the Department for the current list of approved EEL Elective courses. EEL 4834 cannot be used as an EEL elective.

Major-Related (17 sh)

EEL	4834	C++ Programming for Electrical Engineering	3
EGM	2500	Engineering Mechanics: Statics	2
ENC	3240	Technical Writing	3
MAS	3105	Linear Algebra	3
STA	4321	Introduction to Mathematical Statistics I.....	3
		Computer Science Elective	3

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

Upper Division Electives (0 sh)