Cover Sheet: Request 14567

Bachelor of Science in Electrical Engineering

Info

Process	Major Curriculum|Modify|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Shannon Chillingworth schill@ece.ufl.edu
Created	12/19/2019 4:32:14 PM
Updated	2/25/2020 10:11:08 AM
Description of request	Major Curriculum Modification

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Electrical and Computer Engineering 011905000	Robert Fox		12/19/2019
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by the HWCOE Curriculum Committee and the Faculty Council.	2/11/2020
No document changes					
Associate Provost for Undergraduate Affairs	Approved	PV - APUG Review	Casey Griffith		2/19/2020
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/19/2020
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
Academic Assessment Committee Notified					
No document changes					
College Notified					
No document changes					

Major|Modify_Curriculum for request 14567

Info

Request: Bachelor of Science in Electrical Engineering
Description of request: Major Curriculum Modification
Submitter: Shannon Chillingworth schill@ece.ufl.edu
Created: 2/24/2020 10:20:12 AM
Form version: 2

Responses

Major Name Electrical Engineering
Major Code ELE
Degree Program Name Bachelor of Science
Undergraduate Innovation Academy Program No
Effective Term Fall
Effective Year 2020
Current Curriculum for Major Semester One   Credits
Select one: 3
CHM 2045
General Chemistry 1 (Critical Tracking; State Core Gen Ed Biological and Physical Sciences)

CHM 2095
Chemistry for Engineers 1 (Critical Tracking; State Core Gen Ed Biological and Physical Sciences)

CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
IDS 1161	What is the Good Life (Gen Ed Humanities)	3
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)	
	4	

State Core Composition (Writing Requirement) 3
          Credits 14
Semester Two
MAC 2312   Analytic Geometry and Calculus 2 (Critical Tracking; Gen Ed Mathematics)
          4
PHY 2048   Physics with Calculus 1 (Critical Tracking; Gen Ed Physical Sciences)
          3
PHY 2048L   Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences)
          1
Computer Programming elective (Critical Tracking)   3
Gen Ed Social and Behavioral Sciences (Writing Requirement) 3
          Credits 14
Semester Three
MAC 2313   Analytic Geometry and Calculus 3 (Critical Tracking; Gen Ed Mathematics)
          4
PHY 2049   Physics with Calculus 2 (Critical Tracking; Gen Ed Physical Sciences)
          3
PHY 2049L   Laboratory for Physics with Calculus 2   1
EEL 3000   Introduction to Electrical and Computer Engineering 1   2
EEL 3701C   Digital Logic and Computer Systems 1 4
          Credits 14
Semester Four
EEL 3111C   Circuits 1 1   4
EEL 3135   Introduction to Signals and Systems 1   4
MAS 3114   Computational Linear Algebra   3
MAP 2302   Elementary Differential Equations ((Critical Tracking))   3
          Credits 14
Summer After Semester Four
EEL 3008   Physics of Electrical Engineering 1   3

ENC 3246   Professional Communication for Engineers (State Core Composition; Writing Requirement)   3
STA 3032   Engineering Statistics   3
        Credits 9
Semester Five
EEL 3112   Circuits 2 1   3
EEL 3744C   Microprocessor Applications 1   4
State Core Social and Behavioral Sciences with Diversity   3
Electrical Engineering Breadth 1 1   4
        Credits 14
Semester Six
Electrical Engineering Breadth electives #2 and #3 1   8
Interdisciplinary elective #1   3
Electrical Engineering Technical course 3
State Core Humanities with International   3
        Credits 17
Semester Seven
EEL 3923C   Electrical Engineering Design 1 1   3
Electrical Engineering Depth elective #1 1   3
Electrical Engineering Technical electives   7
Interdisciplinary elective #2   3
        Credits 16
Semester Eight
EEL 4924C   Electrical Engineering Design 2 1   3
Electrical Engineering Depth elective #2 1   3
Electrical Engineering Technical electives   7
Interdisciplinary elective #3   3
        Credits 16
        Total Credits   128

1

Completed with a minimum grade of C. In order to use a course as a prerequisite course for course used as a prerequisite for an EEE/EEL-prefixed course, a minimum grade of C is required in the prerequisite course. Any 3000/4000-level EEL/EEE-prefixed course not taken to satisfy the breadth or depth requirement can be applied as an EE technical elective, excluding EEL 3834 only counts for computer programming requirement and EEL 3003, which does not apply toward degree requirements.

APPROVED ELECTIVES
Computer Programming | Select One
Course ListCode   Title   Credits
COP 2271
& 2271L   Computer Programming for Engineers
and Computer Programming for Engineers Laboratory (C++ section)   3
COP 3275   Computer Programming Using C   3
EEL 3834   Programming for Electrical and Computer Engineers   3
Electrical Engineering Breadth | Select Three
Course ListCode   Title   Credits
EEL 3211C   Basic Electric Energy Engineering   4
EEE 3308C   Electronic Circuits 1   4
EEE 3396C   Solid-State Electronic Devices   4
EEL 3472C   Fundamentals of Electromagnetic Fields   4
EEE 4260C   Bioelectrical Systems   4
EEL 4514C   Communication Systems and Components   4
EEL 4657C   Linear Control Systems 4
EEL 4712C   Digital Design   4
Electrical Engineering Depth | 6 Credits
Select one EE Depth course from 2 different EE Breadth areas.
More Info

Interdisciplinary Technical Electives | Select 3 Courses
Students are able to select courses that are 3000-4000 level from the Biology/Biochemistry courses (prefixes of BSC, BCH, CHM, PCB, and ZOO); Mathematics courses (prefixes of MAA, MAD, MAP,

and MAS); Physics courses (prefixes of PHY and PHZ). Students are able to count CHM 2046, CHM 2210, and CHM 2211. Students are able to select courses that are 3000-4000 level from HWCOE (non-ECE) courses.

Electrical Engineering Technical Electives | 17 Credits
Any 3000 level or above course in ECE, with the exception of EEL 3003 and EEL 3008.
Proposed Curriculum Changes Two courses will switch places in the curriculum:
-EEE 3308C (Electronic Circuits 1) will now be required and will no longer be a breadth course.
-EEL 3744C (Microprocessor Applications) will no longer be required. It will be a breadth course.

Proposed changes do not impact critical or universal tracking requirements.
UF Online Curriculum Change No
Pedagogical Rationale/Justification Electrical and Computer Engineering (ECE) is such a broad field that it is hard for students to cover all aspects. Electronics is traditionally a core area of ECE, more fundamental than Microprocessors. After an experiment to require Microprocessors rather than Electronics, we are returning to a more conventional curriculum.
Impact on Enrollment, Retention, Graduation We do not anticipate any negative impacts to enrollment, retention or time to graduation.
Assessment Data Review Not applicable. The courses involved in the change are not those in which student learning outcomes are assessed.
Academic Learning Compact and Academic Assessment Plan Not applicable.
Catalog Copy Yes

ELECTRICAL ENGINEERING

MAJOR

Electrical Engineering

Electrical engineering is concerned with all phases and development of the transmission and utilization of electric energy and intelligence. From communication systems to electronic components that run computers and motor vehicles, electrical engineers design products and systems that meet the needs of today and tomorrow's electrical and electronic systems.
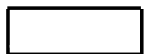
College: Herbert Wertheim College of Engineering
Degree: Bachelor of Science in Electrical Engineering
Credits for Degree: 128
Additional Information
Related Electrical Engineering Programs
To graduate with this major, students must complete all university, college, and major requirements.

Critical Tracking
Model Semester Plan
Academic Learning Compact

While it is essential that electrical engineers understand the fundamentals of their chosen fields, they must also understand the role that other branches of engineering play in completed work. The curriculum provides a foundation in basic engineering as well as depth and breadth in electrical engineering and sufficient electives to allow specialization in academic areas including:

Electronic Devices and Circuits
Electromagnetics, Power and Photonics
Computers, Communications and Systems and Controls

The curriculum also prepares an engineer for professional licensure.

The department's extensive laboratory facilities and varied research programs assist in both experimental and theoretical approaches to electrical and computer engineering.

ADMISSION REQUIREMENTS

It is the department's policy to admit the best-qualified students as demonstrated by academic achievement.

To be admitted, a student must have an overall 2.5 grade point average in critical-tracking courses, based on the first two attempts in eight professional courses and have earned a minimum grade of C in each course of Calculus 1, Calculus 2, Calculus 3, Physics with Calculus 1, Physics with Calculus 2, Differential Equations and General Chemistry. Only the first two attempts (including withdrawals and drops) in each course will be considered for admission to or retention in the department.

DEPARTMENT REQUIREMENTS

A minimum grade of C is required in any course transferred into the junior-senior years from another institution.

Courses marked below with a footnote
[1]
must be completed with minimum grade of C. For a course to be used as a prerequisite for an EEE/EEL-prefixed course, a minimum grade of C is required in the prerequisite course. Any 3000/4000 level EEL/EEE-prefixed course not taken to satisfy the breadth or depth requirement can be applied as EE technical elective, excluding   EEL 3834   only counts for computer programming requirement and   EEL 3003 , which does not apply toward degree requirements.
ECE majors must have an overall 2.0 GPA in all ECE courses to meet degree requirements.

A student must complete both   EEL 3111C   and   EEL 3701C   before taking any 4000-level EEE or EEL course. Electrical Engineering majors must have   EEL 3923C   completed or in progress to apply for the IPPD program.

⌐ More Info
Any course taken to satisfy a degree requirement (general education, required course or technical elective), with the exception of   EGN 4912 ,   EEL 4948 , and   EEL 4949 , cannot be taken S-U.
An electrical engineering student whose cumulative, upper-division or department grade point average falls below 2.0 or whose pre-professional grades do not meet department admission requirements will be placed on academic probation and be required to prepare a probation contract with an ECE academic advisor. If a student is not making normal academic progress, they will be placed on academic probation.

Students normally are given two terms in which to remove their deficit points. Students who do not satisfy the conditions of the first term of probation may be dismissed from the department.

All graduating seniors must complete an exit interview with their advisor before graduating.

EDUCATIONAL OBJECTIVES

The objectives of the Electrical Engineering program at the University of Florida are to prepare students to be good citizens engaged in ethical engineering for the betterment of society and enabling them, so that within a few years of graduation, they:

. Have successful careers providing leadership in a dynamic industry that is global, multi-disciplinary, and evolving;

. Are excelling in the top advanced studies programs in the world.

GOALS

The baccalaureate program prepares students to embark upon professional careers in electrical and computer engineering or to begin graduate study. The department's educational objectives are consistent with the ABET general criteria for accrediting programs in engineering in the United States.

MISSION

The department offers undergraduate and graduate programs in electrical and computer engineering and conducts research to serve the needs of Florida and the nation.

Critical & Universal Tracking records each student's progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida   Common Course Prerequisites may be used for transfer students.

SEMESTER 1

- Complete 1 of 7 tracking courses.   MAC 2311 ,   MAC 2312 ,   MAC 2313 ,   MAP 2302 ,   PHY 2048 ,   PHY 2049 , and   CHM 2045   or   CHM 2095   must be completed with minimum grade of C in each course within two attempts (including withdrawals).
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

SEMESTER 2

- Complete 1 additional critical-tracking course with the appropriate minimum grade within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

SEMESTER 3

- Complete 2 additional critical-tracking courses with the appropriate minimum grades within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

SEMESTER 4

- Complete 2 additional critical-tracking courses with the appropriate minimum grades within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

SEMESTER 5

- Complete remaining 7 critical-tracking courses with the appropriate minimum grades within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

SEMESTER 6

- Complete the two remaining Electrical Engineering Breadth required courses.
- Enroll in one EE Technical Elective courses (see EE technical elective list).
- 2.0 UF GPA required

SEMESTER 7

- Complete EEL 3923C- EE Design 1.

- Must enroll in first EE Depth course.
- Must have enrolled in one EE Technical Elective courses (7 credits, see EE technical elective list).
- 2.0 UF GPA required

SEMESTER 8

- Complete in EEL 4924C- EE Design 2
- Must enroll in last EE Depth course.
- Must enroll in remaining Electrical Engineering Technical Electives (7 credits, see EE technical elective list).
- 2.0 UF GPA required

Overview
Critical Tracking

Academic Learning Compact

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Semester One	
Select one:	
CHM 2045	General Chemistry 1 (**Critical Tracking** ; St Physical Sciences)
CHM 2095	Chemistry for Engineers 1 (**Critical Trackir** Physical Sciences)
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed F
IDS 1161	What is the Good Life (Gen Ed Humanities
MAC 2311	Analytic Geometry and Calculus 1 (**Critica** Mathematics)
State Core Composition (Writing Requirement)	
	Credits
Semester Two	
MAC 2312	Analytic Geometry and Calculus 2 (**Critica**
PHY 2048	Physics with Calculus 1 (**Critical Tracking** ;
PHY 2048L	Laboratory for Physics with Calculus 1 (Ge
Computer Programming elective (**Critical Tracking**)	
Gen Ed Social and Behavioral Sciences (Writing Requirement)	
	Credits
Semester Three	
MAC 2313	Analytic Geometry and Calculus 3 (**Critica**
PHY 2049	Physics with Calculus 2 (**Critical Tracking** ;
PHY 2049L	Laboratory for Physics with Calculus 2 (Ge
EEL 3000	Introduction to Electrical and Computer Er
EEL 3701C	Digital Logic and Computer Systems

1

	Credits
Semester Four	
EEL 3111C	Circuits 1 [1]
EEL 3135	Introduction to Signals and Systems [1]
MAS 3114	Computational Linear Algebra
MAP 2302	Elementary Differential Equations ((**Critic**
	Credits
Summer After Semester Four	
EEL 3008	Physics of Electrical Engineering [1]
ENC 3246	Professional Communication for Engineers Requirement)
STA 3032	Engineering Statistics
	Credits
Semester Five	
EEL 3112	Circuits 2 [1]
EEE 3308C	Electronic Circuits 1 [1]
State Core Social and Behavioral Sciences with Diversity	
Electrical Engineering Breadth 1 [1]	
	Credits
Semester Six	
Electrical Engineering Breadth electives #2 and #3 [1] **(Universal Tracking Semester 6)**	
Interdisciplinary elective #1 [2]	
Electrical Engineering Technical course **(Universal Tracking Semester 6)**	
State Core Humanities with International	
	Credits
Semester Seven	
EEL 3923C	Electrical Engineering Design 1 [1] **(Universal Tracking Semester 7)**
Electrical Engineering Depth elective #1 [1] **(Universal Tracking Semester 7)**	
Electrical Engineering Technical electives **(Universal Tracking Semester 7)**	
Interdisciplinary elective #2	
	Credits
Semester Eight	

	Electrical Engineering Design 2
EEL 4924C	1
	(**Universal Tracking Semester 8**)

Electrical Engineering Depth elective #2
1
(**Universal Tracking Semester 8**)

Electrical Engineering Technical electives

(**Universal Tracking Semester 8**)

Interdisciplinary elective #3

	Credits
	Total Credits

Plan of Study Grid

1 Completed with a minimum grade of C. In order to use a course as a prerequisite course for course used as a prerequisite for an EEE/EEL-prefixed course, a minimum grade of C is required in the prerequisite course. Any 3000/4000-level EEL/EEE-prefixed course not taken to satisfy the breadth or depth requirement can be applied as an EE technical elective, excluding EEL 3834 only counts for computer programming requirement and EEL 3003 , which does not apply toward degree requirements.

2 Additional writing courses may be needed to complete the Gordon Rule Writing Requirement.

APPROVED ELECTIVES

Computer Programming | Select One

Code	Title	Credits
COP 2271	Computer Programming for Engineers	3
⌈& 2271L	⌈and Computer Programming for Engineers Laboratory (C++ section)	
COP 3275	Computer Programming Using C	3
EEL 3834	Programming for Electrical and Computer Engineers	3

Course List

Electrical Engineering Breadth | Select Three

Code	Title	Credits
EEL 3211C	Basic Electric Energy Engineering	4
EEE 3396C	Solid-State Electronic Devices	4
EEL 3472C	Fundamentals of Electromagnetic Fields	4
EEL 3744C	Microprocessor Applications	4
EEE 4260C	Bioelectrical Systems	4
EEL 4514C	Communication Systems and Components	4
EEL 4657C	Linear Control Systems	4
EEL 4712C	Digital Design	4

Electrical Engineering Depth | 6 Credits

Select one EE Depth course from 2 different EE Breadth areas.

⌐ More Info

Interdisciplinary Technical Electives | Select 3 Courses

Students are able to select courses that are 3000-4000 level from the Biology/Biochemistry courses (prefixes of BSC, BCH, CHM, PCB, and ZOO); Mathematics courses (prefixes of MAA, MAD, MAP, and MAS); Physics courses (prefixes of PHY and PHZ). Students are able to count   CHM 2046 ,   CHM 2210 , and   CHM 2211 . Students are able to select courses that are 3000-4000 level from HWCOE (non-ECE) courses. Students can count EML 2023 and EGM 2511.

⌐

Electrical Engineering Technical Electives | 17 Credits

Any 3000 level or above course in ECE, with the exception of   EEL 3003   and   EEL 3008 .

Overview
Critical Tracking
Model Semester Plan

Electrical engineering emphasizes development of the transmission and utilization of electric energy and intelligence. Electrical engineers design products and systems that meet the needs of today and tomorrow's electrical and electronic systems. Students will be able to design communication systems; design the electronic components that run computers, motor vehicles, TVs, stereo systems and robots for automated factories; design aircraft and spacecraft control systems; design utility and industrial power systems; and design biological and biomedical systems.

Accredited by the Engineering Accreditation Commission of ABET,   http://www.abet.org .
ABET EAC Program Educational Objectives, Student Outcomes, and Enrollment and Graduation Numbers can be found on the   college website .

BEFORE GRADUATING STUDENTS MUST

- Pass an assessment of performance on a major design experience. Assessment will be provided by two or more faculty and/or industry practitioners.
- Pass assessment in two courses of individual assignments targeted to each learning outcome. Assessment will be provided by the instructor of the course according to department standards.
- Complete an exit interview in your final semester.
- Complete requirements for the baccalaureate degree, as determined by faculty.

STUDENTS IN THE MAJOR WILL LEARN TO

Student Learning Outcomes (SLOs)

Content

1. Identify, describe, and interpret mathematics, science and engineering principles to electrical engineering problems.

Critical Thinking

2. Design and conduct electrical engineering experiments as well as analyze and interpret data.

3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

Communication

4. Convey technical data and design information effectively for a range of audiences using a variety of methods and media.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
EEL 3000				I, A
EEL 3008	A			
EEL 3135	A			
EEL 3701C		A	I	R
EEL 3923C			A	R
EEL 4924C		A	A	A
Academic Learning Compact 4				

ASSESSMENT TYPES

- Homework assignments
- Exam questions
- Design projects and reports
- Presentations