

Cover Sheet: Request 15491

Bachelor of Science in Computer Engineering

Info

Process	Major Curriculum Modify Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Shannon Chillingworth schill@ece.ufl.edu
Created	11/19/2020 9:19:26 AM
Updated	3/11/2021 8:10:33 AM
Description of request	Curriculum Changes.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Electrical and Computer Engineering 19050000	Robert Fox		1/14/2021
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by the HWCOE Curriculum Committee and Faculty Council.	2/11/2021
No document changes					
Associate Provost for Undergraduate Affairs	Approved	PV - APUG Review	Casey Griffith		2/17/2021
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/17/2021
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 15491

Info

Request: Bachelor of Science in Computer Engineering

Description of request: Curriculum Changes.

Submitter: Shannon Chillingworth schill@ece.ufl.edu

Created: 3/10/2021 3:33:54 PM

Form version: 5

Responses

Major Name

Enter the name of the major. Example: "Mathematical Modeling"

Response:

Computer Engineering

Major Code

Enter the two-letter or three-letter major code.

Response:

CPE

Degree Program Name

Enter the name of the degree program in which the major is offered.

Response:

Bachelor of Science

Undergraduate Innovation Academy Program

Is this an undergraduate program in the Innovation Academy?

Response:

No

Effective Term

Enter the term (semester and year) that the curriculum change would be effective.

Response:

Fall

Effective Year

Response:

2021

Current Curriculum for Major

Response:

SEMESTER ONE CREDITS

Select one:3

CHM 2045

General Chemistry 1 (Critical Tracking; Gen Ed Physical Sciences)

CHM 2095

Chemistry for Engineers 1 (Critical Tracking; Gen Ed Physical Sciences)

CHM 2045L General Chemistry 1 Laboratory (Gen Ed Physical Sciences)

1

COP 3502 Programming Fundamentals 1 3

MAC 2311 Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)

4

Quest 1 (Gen Ed Humanities) 3

State Core Gen Ed Social and Behavioral Sciences (Writing requirement, 6,000 words)

3

Credits 17

SEMESTER TWO

Select one:3

CHM 2046

General Chemistry 2 (Critical Tracking)

CHM 2096

Chemistry for Engineers 2 (Critical Tracking)

Gen Ed Biological Sciences (Critical Tracking; 2000 level or above)

COP 3503 Programming Fundamentals 2 3

MAC 2312 Analytic Geometry and Calculus 2 (Critical Tracking; State Core 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

ENC 1101 Expository and Argumentative Writing (Gen Ed Composition; Writing Requirement: 6,000 words) 3

Credits 17

SEMESTER THREE

COT 3100 Applications of Discrete Structures 3

EEL 3701C Digital Logic and Computer Systems 4

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

ENC 3246 Professional Communication for Engineers (State Core Gen Ed Composition; Writing Requirement: 6,000 words)3

Credits 18

SEMESTER FOUR

CDA 3101 Introduction to Computer Organization 3

COP 3530 Data Structures and Algorithm 4

EEL 3111C Circuits 1 4

MAP 2302 Elementary Differential Equations (Critical Tracking) 3

Gen Ed Social and Behavioral Sciences with Diversity or International; Writing Requirement:

6,000 words 3

Credits 17

SEMESTER FIVE

State Core Gen Ed Humanities with Diversity or International 3

EEL 3744C Microprocessor Applications (Critical Tracking) 4

MAS 3114 Computational Linear Algebra 3

CEN 3031 Introduction to Software Engineering (Critical Tracking) 3

College breadth elective 2-3

Credits 15-16

SEMESTER SIX

EEL 4712C Digital Design 4

College breadth elective 3

Engineering ethics course 1-2

Technical Electives (Critical Tracking) 6

Credits 14-15

SEMESTER SEVEN

Select one CpE Design 1 course: 3

CEN 3913

Computer and Information Science and Engineering Design 1 (Critical Tracking)

EEL 3923C

Electrical Engineering Design 1 (Critical Tracking)

EEL 4912/CIS 4912C

Integrated Product and Process Design 1 (Critical Tracking)

COP 4600 Operating Systems 3

EEL 3135 Introduction to Signals and Systems 4

STA 3032 Engineering Statistics 3

Technical Elective (Critical Tracking) 3

Credits 16

SEMESTER EIGHT

Select one CpE Design 2 course: 3

CEN 4914

Computer and Information Science and Engineering Design 2 (Critical Tracking)

EEL 4924C

Electrical Engineering Design 2 (Critical Tracking)

EEL 4913/CIS 4913C

Integrated Product and Process Design 2 (Critical Tracking)

Technical Electives (Critical Tracking) 9

Credits 12

Total Credits 126

TECHNICAL ELECTIVES

18 Credits

At least 12 credits must be from the CISE and/or ECE department(s). These courses must be 3000-level or higher.

Courses not permitted as technical electives: any core cores, EEL 3834, EEL 3003, CGS 3063, CGS 3065, and COP 3275

A CpE student will have credit for two programming courses (Java and C++). One additional programming language course (not Java or C++) can count as a technical elective.

A maximum of 6 credits can come from the following categories:

4000-level courses in the mathematics department

3000-level courses in the physics department

4000-level courses in the statistics courses
Any advisor-approved course

Proposed Curriculum Changes

Describe the proposed changes to the curriculum. If the change is to offer the program through UF Online, please explain and attach a letter of support from the Director of UF Online.

Response:

Summary of changes:

- A. Drop CHM 2046- CHEM 2 (-3 hours)
- B. COP 3530 - Data Structures and Algorithms (From 4 to 3 hours, -1 hour)
COP 3502C - Programming Fundamentals 1 (From 3 to 4 hours, +1 hour, add "C" lab designation)
COP 3503C - Programming Fundamentals 1 (From 3 to 4 hours, +1 hour, add "C" lab designation))
- C. Drop PHY 2048L - Physics with Calculus 1 Laboratory (- 1hour)
Drop PHY 2049L - Physics with Calculus 2 Laboratory (- 1hour)
- D. Capstone Design Sequence: No longer using CISE or EE sequences
CEN 3907C Computer Engineering Design 1 or EGN 4951 IPPD 1
CEN 3908C Computer Engineering Design 2 or EGN 4952 IPPD 2
- E. EGN 2020C (2 Credits): Engineering Design & Society ("Freshman Design") added as a required course.
- F. Enrichment Electives
Will now be 7 credit hours (5 original "breadth" hours + 2 additional hours from above)
More details in catalog copy

These proposed changes do not alter the overall required number of credits (126). Changes to the 8 semester critical tracking plan are included in catalog copy.

UF Online Curriculum Change

Will this curriculum change be applied to a UF online program as well?

Response:

No

Pedagogical Rationale/Justification

Describe the rationale for the proposed changes to the curriculum.

Response:

The curriculum has been modified to more directly target Computer Engineering student learning outcomes and meet the requirements of the evolving field of Computer Engineering.

Impact on Enrollment, Retention, Graduation

Describe any potential impact of the curriculum changes on students who are currently in the major.

Response:

We do not anticipate any negative impacts to initial enrollment, retention or time to graduation.

Assessment Data Review

Describe the Student Learning Outcome and/or program goal data that was reviewed to support the proposed changes.

Response:

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

Describe the modifications to the Academic Learning Compact (for undergraduate programs) and Academic Assessment Plan that result from the proposed change.

Response:

One minor modification. The design 2 courses in which SLOs 1-4 are assessed (CEN 4914 or EEL 4924C) have been updated to reflect the new CPE Design 2 course number (CEN 3908C). This update is included in the track changes catalog copy. A separate ALC change request has been submitted via the approval system (<https://secure.aa.ufl.edu/Approval/reports/15492>).

Catalog Copy

Submitter agrees to prepare and upload document showing the catalog copy with the current and proposed curricula edited using the "track changes" feature in Word.

Response:

Yes

COMPUTER ENGINEERING

MAJOR

- [Home](#)
- [Undergraduate Catalog](#)
- [Colleges and Schools](#)
- [Engineering, Herbert Wertheim College of](#)
- Computer Engineering

Computer Engineering (CpE) is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of computing systems and computer-controlled equipment. Studies in computer engineering integrate fields from both computer science (CS) and electrical engineering (EE).

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)
- [Academic Learning Compact](#)

Computer engineering (CpE) brings a core competency and unique value of integrated knowledge in both computer software and hardware, providing a balance among computer systems, hardware and software as well as theory and applications. Specialization in computer engineering is provided via technical electives from the Department of Computer and Information Science (www.cise.ufl.edu) and Engineering and the Department of Electrical and Computer Engineering (www.ece.ufl.edu). By properly choosing electives, students can specialize in knowledge areas such as computer architecture, computer system engineering, digital signal processing, embedded systems, intelligent systems, networking and communication and security. Also, opportunities for cooperative education provide students a better understanding of the industrial applications of computer engineering technologies. Graduates will be prepared to pursue graduate studies in computer engineering or they can choose from many different careers related to [computers-computing](#) and their applications in high technology environments. 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](#).

PROGRAM EDUCATION OBJECTIVES

Graduates from the Bachelor of Science in Computer Engineering will:

1. Advance in careers utilizing their education in computer engineering;
2. Continue to enhance their knowledge through graduate or professional studies, self-learning, and on-job training;
3. Become leaders in multidisciplinary and diverse professional environments.

MISSION

- To educate undergraduate majors as well as the broader campus community in the fundamental concepts of the computing discipline
- To create and disseminate computing knowledge and technology
- To use our expertise in computing to help society solve problems.

ADMISSION REQUIREMENTS

Successful applicants must have earned a 2.5 grade point average, based on the first two attempts, in the ~~eight~~ seven pre-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, General Chemistry 1, ~~General Chemistry 2 or 2000 level Biological or Physical Science~~, and Differential Equations. Only the first two attempts (including withdrawals) in each course will be considered for admission to or retention in the department.

Transfer students must attend Transfer Preview as part of admissions. Course equivalency appeals must be submitted to earn credit for coursework completed outside of Common Course Numbering for Core CpE coursework and will be reviewed on a case by case basis.

COMPUTER ENGINEERING REQUIREMENTS

A minimum grade of C is required for each critical-tracking course and the critical-tracking GPA must be a minimum of 2.5.

A minimum grade of C is required in any computer engineering course that is a prerequisite for another computer engineering course and CpE Design 2 (CEN 3908C). The prerequisite course and its subsequent course cannot be taken the same term, even if the prerequisite course is being repeated.

Minimum grades of C are required in:

Code	Title	Credits
<u>CDA 3101</u>	<u>Introduction to Computer Organization</u>	<u>3</u>
<u>CEN 3031</u>	<u>Introduction to Software Engineering</u>	<u>3</u>
<u>COP 3502C</u>	Programming Fundamentals 1	<u>3</u>
<u>COP 3503C</u>	Programming Fundamentals 2	<u>3</u>
<u>COP 3530</u>	<u>Data Structures and Algorithm</u>	<u>3</u>
<u>COT 3100</u>	<u>Applications of Discrete Structures</u>	<u>3</u>
<u>EEL 3701C</u>	Digital Logic and Computer Systems	4
<u>ENC 3246</u>	Professional Communication for Engineers	3
<u>CpE Design 1; select one:</u>		
<u>CEN 3907C</u>	<u>Computer Engineering Design 1</u>	<u>3</u>
<u>EGN 4951</u>	<u>Integrated Product and Process Design 1</u>	<u>3</u>
CpE Design 2; select one:		
<u>CEN 4914</u>	<u>Computer and Information Science and Engineering Design 2</u>	
<u>CEN 3908C</u>	<u>Computer Engineering Design 2</u>	<u>3</u>
<u>CIS 4914</u>	<u>Senior Project</u>	
<u>EEL 4913EGN 4952</u>	Integrated Product and Process Design 2	<u>3</u>
<u>EEL 4924C</u>	<u>Electrical Engineering Design 2</u>	

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Course List

A CpE major grade point average (GPA) is calculated as the average of the grades of all the CISE and ECE courses taken by the student. CpE students must maintain a cumulative, [College](#) upper-division and CpE major GPA minimum of 2.0.

Students who do not meet these requirements will be placed on academic probation and will be required to prepare a probation contract with a CpE advisor. Students are normally given two terms to remove their deficit points; however, students who do not satisfy the conditions of the first term of probation may be dismissed from the program.

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

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)
- [Academic Learning Compact](#)

Critical 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 ~~8~~ 7 critical-tracking courses with a minimum grade of C within two attempts: [CHM 2045](#) or [CHM 2095](#), ~~[CHM 2046](#) or [CHM 2096](#) or a 2000-level or higher advisor-approved science course~~, [MAC 2311](#), [MAC 2312](#), [MAC 2313](#), [MAP 2302](#), [PHY 2048](#), [PHY 2049](#)
- 2.5 GPA required for all 7 critical-tracking courses
- 2.0 UF GPA required

SEMESTER 2

- Complete ~~1~~ 2 additional critical-tracking course with a minimum grade of C within two attempts
- 2.5 GPA required for all 7 critical-tracking courses
- 2.0 UF GPA required

SEMESTER 3

- Complete 2 additional critical-tracking courses with minimum grades of C within two attempts
- 2.5 GPA required for all 7 critical-tracking courses
- 2.0 UF GPA required

SEMESTER 4

- Complete ~~2 additional~~ all 7 critical-tracking courses with minimum grades of C within two attempts

- 2.5 GPA required for all **7** critical-tracking courses
- 2.0 UF GPA required

SEMESTER 5

- ~~Complete all 8 critical tracking courses with minimum grades of C in each course within two attempts~~
- [Complete EEL 4744C](#)
- 2.5 GPA required for all **7** critical-tracking courses
- 2.0 UF GPA required

SEMESTER 6

- Complete ~~EEL 3744~~[EEL 4712C](#) and ~~CEN 3031~~[with a grade of C or better](#)
- 2.0 departmental GPA required
- 2.0 UF GPA required

SEMESTER 7

- Complete CpE Design 1 course with a grade of C or better
- Complete at least 4 of 6 Technical Electives
- 2.0 departmental GPA required
- 2.0 UF GPA required

SEMESTER 8

- Complete CpE Design 2 course with a grade of C or better
- 2.0 departmental GPA required
- 2.0 UF GPA required

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)
- [Academic Learning Compact](#)

Students are expected to complete the general education International (GE-N) and Diversity (GE-D) requirements. This is often done concurrently with another general education requirement, typically GE-C, H, or S.

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		CREDITS
Select one:		3
<u>CHM 2045</u>	General Chemistry 1 (Critical Tracking ; Gen Ed Physical Sciences)	-
<u>CHM 2095</u>	Chemistry for Engineers 1 (Critical Tracking ; Gen Ed Physical Sciences)	-
<u>CHM 2045L</u>	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
<u>COP 3502C</u>	Programming Fundamentals 1	3
<u>EGN 2020C</u>	Engineering Design & Society (Gen Ed Physical Science)	2
<u>MAC 2311</u>	Analytic Geometry and Calculus 1 (Critical Tracking ; State Core Gen Ed Mathematics)	4
Quest 1 (Gen Ed Humanities)		3
State Core Gen Ed Social and Behavioral Sciences <u>Composition</u> (Writing requirement, 6,000 words)		3
Credits		17
SEMESTER TWO		
Select one:		3
<u>CHM 2046</u>	General Chemistry 2 (Critical Tracking)	-
<u>CHM 2096</u>	Chemistry for Engineers 2 (Critical Tracking)	-
Gen Ed Biological Sciences (Critical Tracking ; 2000 level or above)		-
<u>COP 3503C</u>	Programming Fundamentals 2	3

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<u>COT 3100</u>	<u>Applications of Discrete Structures</u>	<u>3</u>
<u>MAC 2312</u>	Analytic Geometry and Calculus 2 (Critical Tracking ; State Core Gen Ed Mathematics)	4
<u>PHY 2048</u>	Physics with Calculus 1 (Critical Tracking ; Gen Ed Physical Sciences)	3
<u>Quest 2</u>	<u>Gen Ed Social and Behavioral Sciences (Diversity, Writing Requirement)</u>	<u>3</u>
<u>PHY 2048L</u>	<u>Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences)</u>	<u>1</u>
<u>ENC 1101</u>	<u>Expository and Argumentative Writing (Gen Ed Composition; Writing Requirement: 6,000 words)</u>	<u>3</u>
Credits		17

SEMESTER THREE

<u>COT 3100</u>	<u>Applications of Discrete Structures</u>	<u>3</u>
<u>EEL 3701C</u>	<u>Digital Logic and Computer Systems</u>	<u>4</u>
<u>CDA 3101</u>	<u>Introduction to Computer Organization</u>	<u>3</u>
<u>COP 3530</u>	<u>Data Structures and Algorithm</u>	<u>3</u>
<u>MAC 2313</u>	Analytic Geometry and Calculus 3 (Critical Tracking ; Gen Ed Mathematics)	4
<u>PHY 2049</u>	Physics with Calculus 2 (Critical Tracking ; Gen Ed Physical Sciences)	3
<u>Enrichment Elective</u>		<u>3</u>
<u>PHY 2049L</u>	<u>Laboratory for Physics with Calculus 2</u>	<u>1</u>
<u>ENC 3246</u>	<u>Professional Communication for Engineers (State Core Gen Ed Composition; Writing Requirement: 6,000 words)</u>	<u>3</u>
Credits		<u>18</u>

SEMESTER FOUR

<u>CDA 3101</u>	Introduction to Computer Organization	3
<u>COP 3530</u>	Data Structures and Algorithm	4
<u>EEL 3111C</u>	Circuits I	4
Select One:		3
<u>CHM 2045</u>	CHM 2045 General Chemistry 1 (Critical Tracking: Gen Ed Physical Sciences)	
<u>CHM 2095</u>	CHM 2095 Chemistry for Engineers 1 (Critical Tracking: Gen Ed Physical Sciences)	
<u>CHM 2045L</u>	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
<u>EEL 3701C</u>	Digital Logic and Computer Systems	4
<u>ENC 3246</u>	Professional Communication for Engineers (State Core Gen Ed Composition; Writing Requirement: 6,000 words)	3
<u>MAP 2302</u>	Elementary Differential Equations (Critical Tracking)	3
	<u>State Core Humanities (International or Writing Requirement) Gen Ed Social and Behavioral Sciences with Diversity or International; Writing Requirement: 6,000 words</u>	3
	Credits	17
SEMESTER FIVE		
	<u>State Core Gen Ed Humanities with Diversity or International</u>	3
<u>EEL 3111C</u>	<u>Circuits I</u>	4
<u>EEL 3744/CEEL 4744C</u>	Microprocessor Applications (Critical Tracking)	4
<u>MAS 3114</u>	<u>Computational Linear Algebra</u>	3
<u>CEN 3031</u>	<u>Introduction to Software Engineering (Critical Tracking)</u>	3
<u>STA 3032</u>	<u>Engineering Statistics</u>	3

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~~College-breadth~~Enrichment -electiveElective: Writing Requirement 2-31

State Core Social and Behavioral Sciences: Writing Requirement 3

Credits 15-1615

SEMESTER SIX

CEN 3031 Introduction to Software Engineering (Critical Tracking) 3

MAS 3114 Computational Linear Algebra 3

EEL 4712C Digital Design (Critical Tracking) 4

~~College-Enrichment~~ breadth elective 3

~~Engineering ethics course~~ 1-2

Technical Electives (~~Critical Tracking~~) 63

Credits 14-1516

SEMESTER SEVEN

Select one CpE Design 1 course: 3

~~CEN 3913 Computer and Information Science and Engineering Design 1 (Critical Tracking)~~ -

~~EEL 3923C Electrical Engineering Design 1 (Critical Tracking)~~ -

~~CEN 3907C Computer Engineering Design 1 (Critical Tracking)~~

~~EEL 4912/CIS 4912/CEGN 4951 Integrated Product and Process Design 1 (Critical Tracking)~~

COP 4600 Operating Systems 3

EEL 3135 Introduction to Signals and Systems 4

STA 3032 Engineering Statistics 3

Technical Elective (~~Critical Tracking~~) 39

Credits		1615
SEMESTER EIGHT		
Select one CpE Design 2 course:		3
<u>CEN 4914</u>	Computer and Information Science and Engineering Design 2 (Critical Tracking)	-
<u>EEL 4924C</u>	Electrical Engineering Design 2 (Critical Tracking)	-
<u>CEN 3908C</u>	Computer Engineering Design 2 (Critical Tracking)	-
<u>EEL 4913/CIS 4913CEGN 4952</u>	Integrated Product and Process Design 2 (Critical Tracking)	-
<u>EEL 3135</u>	Introduction to Signals and Systems	4
<u>EGS 4034</u>	Engineering Professionalism and Ethics	1
Technical Electives (Critical Tracking)		<u>9</u>
Credits		1214
Total Credits		126
Plan of Study Grid		

TECHNICAL ELECTIVES

18 Credits

- At least 12 credits must be from the CISE and/or ECE department(s). These courses must be 3000-level or higher.
- ~~Courses not permitted as technical electives: any core courses, EEL 3834, EEL 3003, CGS 3063, CGS 3065, and COP 3275.~~
- ~~List of exceptions is posted on the CpE website: <https://cpe.eng.ufl.edu/tech-electives/>~~
- A CpE student will have credit for two programming courses (Java and C++). One additional programming language course (not Java or C++) can count as a technical elective.

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- A maximum of 6 credits can come from the following categories:
 - 4000-level courses in the mathematics department
 - 3000-level courses in the physics department
 - 4000-level courses in the statistics courses
 - Any approved course from the mathematics department, physics department, or any department in the College of Engineering
 - Any advisor-approved course (through petition)

ENRICHMENT ELECTIVES

7 Credits

College of Engineering Certificate Programs

ENGINEERING LEADERSHIP CERTIFICATE

1. EGS 4038 Engineering Leadership
2. EGS 4680 – Advanced Engineering Leadership Development
3. EGS 4625 – Fundamentals of Engineering Project Management
4. EGN 4641 – Engineering Entrepreneurship
5. EGN 4643 – Engineering Innovation

ENGINEERING PROJECT MANAGEMENT CERTIFICATE

- EGS 4625 – Fundamentals of Engineering Project Management
- EIN 3354 – Engineering Economy

Other approved breadth electives (e.g., Thermo, Statics, Solidworks,

Materials)

- EMA 3010 Materials
- EGM 2511 Engineering Mechanics: Statics
- EML 2023 Computer Aided Graphics and Design
- EML 3007 Elements of Thermodynamics and Heat Transfer
- EML 3100 Thermodynamics

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- [EES 3008 Energy and Environment](#)
- [ABE 2062 Biology for Engineers](#)

[Approved internship hours, up to 3 credits](#)

- [EEL 4948 Internship](#)
- [EEL 4949 Co-Op](#)

[Approved critical professional development skills, up to 6 credits \(e.g.,](#)

[communication skills, Gordon Rule courses\)](#)

- [CGS 3063 Computers and Modern Society](#)

[Any advisor-approved course \(through petition\)](#)

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)

[Academic Learning Compact](#)

The Bachelor of Science in Computer Engineering is concerned with the theory, design, development and application of computer systems and information processing techniques. Students will be equally proficient working with computer systems, hardware and software, as with computer theory and applications.

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 assessment according to department rubric of student performance on a major design experience.
- Pass assessment in one or more core courses of individual assignments targeted to each SLO.
- Complete requirements for the baccalaureate degree, as determined by faculty.

STUDENTS IN THE MAJOR WILL LEARN TO

Student Learning Outcomes (SLOs)

Content

1. Apply knowledge of mathematics and science to computer engineering problems.
2. Design and conduct computer-engineering experiments, analyzing and interpreting the data.

Critical Thinking

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

Communication

4. Communicate technical data and design information effectively in writing and in speech to other computer scientists and engineers.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
<u>CEN 3031</u>				I, A
<u>CEN 4914</u> or <u>EEL 4924</u> <u>CEN 3908C</u>	A	A	A	A
<u>EEL 3135</u>	I, A	I, A		
<u>EEL 3701C</u>			I	

Academic Learning Compact 4

ASSESSMENT TYPES

- Assignments
- Exams
- Reports
- Exit survey

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)
- [Academic Learning Compact](#)

Students are expected to complete the general education International (GE-N) and Diversity (GE-D) requirements. This is often done concurrently with another general education requirement, typically GE-C, H, or S.

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		CREDITS
COP 3502C	Programming Fundamentals 1	4
EGN 2020C	Engineering Design & Society (Gen Ed Physical Science)	2
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)	4
Quest 1 (Gen Ed Humanities)		3
State Core Composition (Writing requirement)		3
Credits		16
SEMESTER TWO		
COP 3503C	Programming Fundamentals 2	4
COT 3100	Applications of Discrete Structures	3
MAC 2312	Analytic Geometry and Calculus 2 (Critical Tracking; State Core Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (Critical Tracking; Gen Ed Physical Sciences)	3

Quest 2	Gen Ed Social and Behavioral Sciences (Diversity, Writing Requirement)	3
Credits		17
SEMESTER THREE		
<u>CDA 3101</u>	Introduction to Computer Organization	3
COP 3530	Data Structures and Algorithm	3
<u>MAC 2313</u>	Analytic Geometry and Calculus 3 (Critical Tracking; Gen Ed Mathematics)	4
<u>PHY 2049</u>	Physics with Calculus 2 (Critical Tracking; Gen Ed Physical Sciences)	3
<u>Enrichment Elective</u>		3
Credits		16
SEMESTER FOUR		
Select One:		3
CHM 2045	CHM 2045 General Chemistry 1 (Critical Tracking; Gen Ed Physical Sciences)	
CHM 2095	CHM 2095 Chemistry for Engineers 1 (Critical Tracking; Gen Ed Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
EEL 3701C	Digital Logic and Computer Systems	4
<u>ENC 3246</u>	Professional Communication for Engineers (<u>State Core Gen Ed Composition</u> ; Writing Requirement: 6,000 words)	3
<u>MAP 2302</u>	Elementary Differential Equations (Critical Tracking)	3
State Core Humanities (International or Writing Requirement)		3
Credits		17
SEMESTER FIVE		

<u>EEL 3111C</u>	Circuits 1	4
<u>EEL 4744C</u>	Microprocessor Applications (Critical Tracking)	4
<u>STA 3032</u>	Engineering Statistics	3
Enrichment Elective; Writing Requirement		1
State Core Social and Behavioral Sciences; Writing Requirement		3
Credits		15
SEMESTER SIX		
<u>CEN 3031</u>	Introduction to Software Engineering (Critical Tracking)	3
<u>MAS 3114</u>	Computational Linear Algebra	3
<u>EEL 4712C</u>	Digital Design (Critical Tracking)	4
Enrichment elective		3
Technical Electives		3
Credits		16
SEMESTER SEVEN		
Select one CpE Design 1 course:		3
CEN 3907C	Computer Engineering Design 1 (Critical Tracking)	
<u>EGN 4951</u>	Integrated Product and Process Design 1 (Critical Tracking)	
<u>COP 4600</u>	Operating Systems	3
Technical Elective		9
Credits		15
SEMESTER EIGHT		
Select one CpE Design 2 course:		3

CEN 3908C	Computer Engineering Design 2 (Critical Tracking)	
<u>EGN 4952</u>	Integrated Product and Process Design 2 (Critical Tracking)	
<u>EEL 3135</u>	Introduction to Signals and Systems	4
EGS 4034	Engineering Professionalism and Ethics	1
Technical Electives		6
Credits		14
Total Credits		126
Plan of Study Grid		

- [Overview](#)
- [Critical Tracking](#)
- [Model Semester Plan](#)
- [Academic Learning Compact](#)

Students are expected to complete the general education International (GE-N) and Diversity (GE-D) requirements. This is often done concurrently with another general education requirement, typically GE-C, H, or S.

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		CREDITS
Select one:		3
CHM 2045	General Chemistry 1 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2095	Chemistry for Engineers 1 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1
COP 3502	Programming Fundamentals 1	3
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking ; State Core Gen Ed Mathematics)	4
Quest 1 (Gen Ed Humanities)		3
State Core Gen Ed Social and Behavioral Sciences (Writing requirement, 6,000 words)		3
Credits		17
SEMESTER TWO		
Select one:		3
CHM 2046	General Chemistry 2 (Critical Tracking)	

<u>CHM 2096</u>	Chemistry for Engineers 2 (Critical Tracking)	
Gen Ed Biological Sciences (Critical Tracking ; 2000 level or above)		
<u>COP 3503</u>	Programming Fundamentals 2	3
<u>MAC 2312</u>	Analytic Geometry and Calculus 2 (Critical Tracking ; State Core Gen Ed Mathematics)	4
<u>PHY 2048</u>	Physics with Calculus 1 (Critical Tracking ; Gen Ed Physical Sciences)	3
<u>PHY 2048L</u>	Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences)	1
<u>ENC 1101</u>	Expository and Argumentative Writing (Gen Ed Composition; Writing Requirement: 6,000 words)	3
Credits		17
SEMESTER THREE		
<u>COT 3100</u>	Applications of Discrete Structures	3
<u>EEL 3701C</u>	Digital Logic and Computer Systems	4
<u>MAC 2313</u>	Analytic Geometry and Calculus 3 (Critical Tracking ; Gen Ed Mathematics)	4
<u>PHY 2049</u>	Physics with Calculus 2 (Critical Tracking ; Gen Ed Physical Sciences)	3
<u>PHY 2049L</u>	Laboratory for Physics with Calculus 2	1
<u>ENC 3246</u>	Professional Communication for Engineers (<u>State Core Gen Ed Composition</u> ; Writing Requirement: 6,000 words)	3
Credits		18
SEMESTER FOUR		
<u>CDA 3101</u>	Introduction to Computer Organization	3
<u>COP 3530</u>	Data Structures and Algorithm	4
<u>EEL 3111C</u>	Circuits 1	4
<u>MAP 2302</u>	Elementary Differential Equations (Critical Tracking)	3

Gen Ed Social and Behavioral Sciences with Diversity or International; Writing Requirement: 6,000 words	3
Credits	17
SEMESTER FIVE	
<u>State Core Gen Ed Humanities with Diversity or International</u>	3
<u>EEL 3744C</u> Microprocessor Applications (Critical Tracking)	4
<u>MAS 3114</u> Computational Linear Algebra	3
<u>CEN 3031</u> Introduction to Software Engineering (Critical Tracking)	3
College breadth elective	2-3
Credits	15-16
SEMESTER SIX	
<u>EEL 4712C</u> Digital Design	4
College breadth elective	3
Engineering ethics course	1-2
Technical Electives (Critical Tracking)	6
Credits	14-15
SEMESTER SEVEN	
Select one CpE Design 1 course:	3
<u>CEN 3913</u> Computer and Information Science and Engineering Design 1 (Critical Tracking)	
<u>EEL 3923C</u> Electrical Engineering Design 1 (Critical Tracking)	
<u>EEL 4912/CIS 4912C</u> Integrated Product and Process Design 1 (Critical Tracking)	
<u>COP 4600</u> Operating Systems	3
<u>EEL 3135</u> Introduction to Signals and Systems	4
<u>STA 3032</u> Engineering Statistics	3

Technical Elective (Critical Tracking)	3
Credits	16
SEMESTER EIGHT	
Select one CpE Design 2 course:	3
<u>CEN 4914</u> Computer and Information Science and Engineering Design 2 (Critical Tracking)	
<u>EEL 4924C</u> Electrical Engineering Design 2 (Critical Tracking)	
<u>EEL 4913/CIS 4913C</u> Integrated Product and Process Design 2 (Critical Tracking)	
Technical Electives (Critical Tracking)	9
Credits	12
Total Credits	126
Plan of Study Grid	