

# PURDUE

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## UNIVERSITY

SCHOOL OF ELECTRICAL  
AND COMPUTER ENGINEERING  
UNDERGRADUATE COUNSELING OFFICE

March 4, 2019

Engineering Faculty Document 106-19  
March 4, 2019  
Page 1 of 1

To: The Engineering Faculty  
From: School of Electrical and Computer Engineering  
Re: 2019-2020 BSEE Degree Requirements

The School of Electrical and Computer Engineering has approved the following degree requirements for the BSEE degree starting the 2019-2020 catalog term. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: See Attachment #1

To: See Attachment #2

Reason:

- The current ECE seminar courses, ECE 20000 (0 cr.) and ECE 40000 (1 cr.), are being replaced by three new ECE seminar courses: ECE 29401 (1 cr.), ECE 39401 (1 cr.), and ECE 49401 (1 cr.).
- ECE 20100 (3 cr.), ECE 20700 (1 cr.), ECE 20200 (3 cr.), ECE 25500 (3 cr.), and ECE 20800 (1 cr.) are being replaced by ECE 20001 (3), ECE 20007 (1 cr.), ECE 20002 (3 cr.) and ECE 20008 (1 cr.)
- ECE 26400 (Advanced C Programming, 3 cr.) and ECE 20875 (Python for Data Science, 3 cr.) are being added as major requirements.
- The required credit hours of major courses has been increased from 47 credits to 52 credits to accommodate the above changes. A corresponding reduction in Complementary Electives is made to keep the total credits required for the degree at 124 credit hours.



Head of ECE

**Purdue University**

**2018-2019 University Catalog**

## **Computer Engineering, BSCMPE**

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### **Degree Requirements**

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#### **125 Credits Required**

#### **Required Major Courses (49 credits)**

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An overall 2.000 cumulative GPA or better in these courses is required. Some courses have minimum grade requirements for prerequisites.

## CmpE Core Requirements (28 credits)

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- [ECE 20100 - Linear Circuit Analysis I](#)
- [ECE 20200 - Linear Circuit Analysis II](#)
- [ECE 20700 - Electronic Measurement Techniques](#)
- [ECE 26400 - Advanced C Programming](#)
- [ECE 27000 - Introduction To Digital System Design](#)
- [ECE 30100 - Signals And Systems](#)
- [ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering](#)
- [ECE 36200 - Microprocessor Systems And Interfacing](#)
- [ECE 36400 - Software Engineering Tools Laboratory](#)
- [ECE 36800 - Data Structures](#)

## Required Seminars (1 credit)

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- [ECE 20000 - Electrical And Computer Engineering Seminar](#)
- [ECE 40000 - Professional Development And Career Guidance](#)

## Senior Design Requirement - Choose One Option (3-4 credits)

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The CmpE Core Requirements listed above must be completed before taking Senior Design.

### Option 1 (4 credits):

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- [ECE 47700 - Digital Systems Senior Project](#)

### Option 2 (4 credits):

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- [ECE 49022 - Electrical Engineering Senior Design Projects](#)

### Option 3 (3 credits):

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Must be taken in consecutive semesters.

- [EPCS 41100 - Senior Design Participation In EPICS](#)
- [EPCS 41200 - Senior Design Participation In EPICS](#)

### Option 4 (4 credits):

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Must be taken in each of 2 consecutive semesters.

- [EPCS 41200 - Senior Design Participation In EPICS](#)

## Computer Engineering Selectives (16 credits)

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Select from the following list so that total credits for Required Major Courses is at least 49.

If the 3 credit Senior Design option is selected, 17 credits are needed.

- [ECE 30834 - Fundamentals Of Computer Graphics](#)
- [ECE 30862 - Object-Oriented Programming In C++ And Java](#)
- [ECE 33700 - ASIC Design Laboratory](#)
- [ECE 40400 - Introduction To Computer Security](#)
- [ECE 43700 - Computer Design And Prototyping](#)

- [ECE 46100 - Software Engineering](#)
- [ECE 46900 - Operating Systems Engineering](#)
  
- [ECE 46300 - Introduction To Computer Communication Networks](#) or
- [ECE 50863 - Computer Network Systems](#)
  
- [ECE 46800 - Introduction To Compilers And Translation Engineering](#) or
- [ECE 57300 - Compilers And Translator Writing Systems](#)
  
- [ECE 40862 - Software For Embedded Systems](#) or
- [ECE 56800 - Embedded Systems](#)
  
- [ECE 47300 - Introduction To Artificial Intelligence](#) or
- [ECE 57000 - Artificial Intelligence](#)
- Maximum of 6 credits of Computer Engineering “Special Content” courses. (See the Additional Degree Rerequirements)

## Other Department/Program Course Requirements (76 credits)

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### General Engineering Requirement (10 or 14 credits)

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Choose One Introductory Engineering Option and One Engineering Breadth Selective.

#### Introductory Engineering - Choose One Option (7 or 11 credits)

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##### Option 1 (7 credits):

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- [ENGR 13100 - Transforming Ideas To Innovation I](#)
- [ENGR 13200 - Transforming Ideas To Innovation II](#)
- [CS 15900 - Programming Applications For Engineers](#)

##### Option 2 - EPICS (7 credits)

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- [ENGR 13300 - Transforming Ideas To Innovation, EPICS](#)
- [EPCS 11100 - First Year Participation In EPICS I](#)
- [EPCS 12100 - First Year Participation In EPICS II](#)
- [CS 15900 - Programming Applications For Engineers](#)

##### Option 3 - Honors (11 credits)

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*ENGR 16100/16200 includes the equivalent of PHYS 17200.*

- [ENGR 16100 - Honors Introduction To Innovation And The Physical Science Of Engineering Design I](#)
- [ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II](#)
- [CS 15900 - Programming Applications For Engineers](#)

#### Engineering Breadth Selective - Choose One (3 credits)

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- [AAE 20300 - Aeromechanics I](#)
- [BME 20100 - Biomolecules: Structure, Function, And Engineering Applications](#)
- [CE 29700 - Basic Mechanics I \(Statics\)](#)
- [CE 35000 - Introduction To Environmental And Ecological Engineering](#)

- [CE 35300 - Physico-Chemical Principles Of Environmental Engineering](#)
- [CE 35500 - Engineering Environmental Sustainability](#)
- [CHE 20500 - Chemical Engineering Calculations](#)
- [EEE 35500 - Engineering Environmental Sustainability](#)
- [IE 33500 - Operations Research - Optimization](#)
- [IE 33600 - Operations Research - Stochastic Models](#)
- [ME 20000 - Thermodynamics I](#)
- [ME 27000 - Basic Mechanics I](#)
- [ME 41300 - Noise Control](#)
- [MSE 23000 - Structure And Properties Of Materials](#)
- [NUCL 20000 - Introduction to Nuclear Engineering](#)

## Mathematics Requirement - Choose One Option (21-24 credits)

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### Option 1 (21-23 credits)

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- [MA 16500 - Analytic Geometry And Calculus I](#) or
- [MA 16100 - Plane Analytic Geometry And Calculus I](#)
  
- [MA 16600 - Analytic Geometry And Calculus II](#) or
- [MA 16200 - Plane Analytic Geometry And Calculus II](#)
  
- [MA 26100 - Multivariate Calculus](#)
- [MA 26500 - Linear Algebra](#)
- [MA 26600 - Ordinary Differential Equations](#)
- [ECE 36900 - Discrete Mathematics For Computer Engineering](#)

### Option 2 (22-24 credits)

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- [MA 16500 - Analytic Geometry And Calculus I](#) or
- [MA 16100 - Plane Analytic Geometry And Calculus I](#)
  
- [MA 16600 - Analytic Geometry And Calculus II](#) or
- [MA 16200 - Plane Analytic Geometry And Calculus II](#)
  
- [MA 26100 - Multivariate Calculus](#)
- [MA 26200 - Linear Algebra And Differential Equations](#)
- [ECE 36900 - Discrete Mathematics For Computer Engineering](#)

#### **Advanced Math Selective** - Choose One (3 credits)

- [MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences](#)
- [MA 30400 - Differential Equations And Analysis Of Nonlinear Systems For Engineering And The Sciences](#)
- [MA 38500 - Introduction To Logic](#)
- [MA 42500 - Elements Of Complex Analysis](#)
- [MA 51000 - Vector Calculus](#)
- [CS 31400 - Numerical Methods](#)

## Science Requirement (11 or 15 credits minimum)

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*11 credits minimum if Introductory Engineering Option 3 was selected (contains the equivalent of PHYS 17200)*

*15 credits minimum if Introductory Engineering Option 1 or 2 was selected.*

- [CHM 11500 - General Chemistry](#)
- [PHYS 17200 - Modern Mechanics](#)
- [PHYS 27200 - Electric And Magnetic Interactions](#)

**Science Selective** - Choose One

- [BIOL 11000 - Fundamentals Of Biology I](#)
- [BIOL 11100 - Fundamentals Of Biology II](#)
- [BIOL 12100 - Biology I: Diversity, Ecology, And Behavior](#) and
- [BIOL 13500 - First year Biology Laboratory](#)
- [BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms](#)
- [CHM 11600 - General Chemistry](#)
- [CHM 12400 - General Chemistry For Engineers II](#)
- [PHYS 31000 - Intermediate Mechanics](#)
- [PHYS 32200 - Intermediate Optics](#)
- [PHYS 34200 - Modern Physics](#)
- [PHYS 34400 - Modern Physics](#)

## ECE General Education Requirement (24 credits)

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While a comprehensive understanding of science and mathematics is central and foundational to effective engineering practice, real-world engineering problems are both complex and situated within dynamic social, political, and cultural contexts. Therefore, well-rounded engineering curricula must also include courses that encompass the breadth of human experience and culture, both past and present. Such courses may include, but are not limited to, those that explore individual behavior, social and political structures, aesthetic values, modes and dynamics of communication, philosophical and ethical thought, and cognitive processes. These types of courses provide engineering students with a framework for rational inquiry, critical evaluation, and judgment when dealing with issues that are non-quantifiable, ambiguous, and/or controversial. In addition, they offer engineering students the opportunity to develop interests and insights that will deepen their appreciation for the diversity of the world in which they live and work.

Based on these premises, the goals of the ECE General Education Program are to

- Provide the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- Support and complement the technical content of the engineering curricula through coursework that emphasizes such skills as written communication, oral communication, information literacy, cultural awareness, leadership, innovation, entrepreneurship, and managing change.

These goals are consistent with the objectives of the College of Engineering's Engineer of 2020 initiative (Engineering Faculty Document 15-06), as well as the objectives of Purdue University's Undergraduate Outcomes-Based Curriculum (University Senate Document 11-7).

To these ends, all B.S. students in Electrical and Computer Engineering are required to complete the ECE General Education Program described below. This program is consistent with the College of Engineering General Education Program (Engineering Faculty Documents 43-13 and 39-14).

### Foundational General Education Electives

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Students must select from the list of courses approved by the University Curriculum Council (UCC) to satisfy each of the following six Foundational Learning Outcomes of the University Core Requirements (click [here](#)) - the Science and Quantitative Reasoning Foundational Outcomes are satisfied elsewhere in the BSCMPE curriculum. Some courses may have been approved to meet more than one of the Foundational Learning Outcomes, so fewer than six courses can be used to fulfill this condition. There is no minimum number of credit hours needed to satisfy this component of the College of Engineering General Education Program. If a course taken to fulfill some other EE/CMPE degree requirement has also been approved as satisfying one or more of these Engineering Foundational

Learning Outcomes, then those Engineering Foundational Learning Outcomes need not be satisfied again within the ECE General Education Program. Students must earn a grade of C- or better in courses used to satisfy this component of the ECE General Education Program. The pertinent Foundational Learning Outcomes are defined as follows:

- Written Communication
- Oral Communication
- Information Literacy
- Human Cultures: Humanities
- Human Cultures: Behavioral/Social Science
- Science, Technology & Society

## **ECE General Education Electives**

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Students must take additional approved courses to reach the minimum requirement of 24 credit hours. Other courses, as approved by the ECE Curriculum Committee, may also be selected. See Additional Degree Requirements below to see the list of approved courses.

## **Advanced Level General Education Requirement**

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At least 6 of the 24 credit hours needed to satisfy the ECE General Education Requirement must come from courses at the 30000-level or above, or from courses with a required prerequisite in the same department.

## **Educational Diversity Requirement**

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At least 12 credit hours of the 24 credit hours needed to satisfy the ECE General Education Requirement must be taken from the College of Liberal Arts, the Krannert School of Management, and/or the Honors College - provided such courses are not focused primarily on engineering, technology, the natural sciences, or mathematics. The subject areas associated with these colleges and school are:

- College of Liberal Arts: AAS, AD, AMST, ANTH, ARAB, ASL, CHNS, CLCS, CMPL, COM, DANC, ENGL, FR, GER, GREK, HEBR, HIST, IDIS, ITAL, JPNS, JWST, LATN, LC, LING, MARS, MUS, PHIL, POL, PTGS, REL, RUSS, SOC, SPAN, THTR, WGSS
- Krannert School of Management: ECON, ENTR, MGMT
- Honors College: HONR

## **Complementary Electives (up to 6 credits)**

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Choose additional coursework to bring total credits to the minimum 125 required for the BSCMPE degree. Students should carefully select these courses to complement their personal interests and their academic record.

All courses, except those specifically excluded by the ECE Curriculum Committee, may be used as Complementary Electives (See Additional Degree Requirements below to view list).

## **University Core Requirements**

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- Human Cultures Humanities
- Human Cultures Behavioral/Social Science
- Information Literacy
- Science #1
- Science #2
- Science, Technology, and Society
- Written Communication
- Oral Communication
- Quantitative Reasoning

For a complete listing of course selectives, visit the [Provost's Website](#).

## Prerequisite Information:

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For current pre-requisites for courses, click [here](#).

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## Additional Degree Requirements

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- [Electrical and Computer Engineering General Education](#)
- [Computer Engineering "Special Content" Courses](#)
- [Electrical and Computer Engineering No Count List](#)

## Program Requirements

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The following is an example of a 4-year plan that satisfies the BSCMPE degree requirements.

### Fall 1st Year

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- [ENGR 13100 - Transforming Ideas To Innovation I](#)
- [MA 16500 - Analytic Geometry And Calculus I](#)
- [CHM 11500 - General Chemistry](#)
- [SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity](#)
- Foundational General Education Elective - Credit Hours: 3.00

**16 Credits**

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### Spring 1st Year

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- [ENGR 13200 - Transforming Ideas To Innovation II](#)
- [MA 16600 - Analytic Geometry And Calculus II](#)
- [PHYS 17200 - Modern Mechanics](#)
- [SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World](#)
- [CS 15900 - Programming Applications For Engineers](#)

**16 Credits**

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### Fall 2nd Year

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- [ECE 20000 - Electrical And Computer Engineering Seminar](#)
- [ECE 20100 - Linear Circuit Analysis I](#) ♦
- [ECE 20700 - Electronic Measurement Techniques](#)
- [ECE 26400 - Advanced C Programming](#) ♦
- [MA 26100 - Multivariate Calculus](#) ♦
- [PHYS 27200 - Electric And Magnetic Interactions](#)

**15 Credits**

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### Spring 2nd Year

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- [ECE 20200 - Linear Circuit Analysis II](#)
- [ECE 27000 - Introduction To Digital System Design](#) ♦
- [ECE 36800 - Data Structures](#)
- [MA 26600 - Ordinary Differential Equations](#)
- ECE Science Selective - Credit Hours: 3.00

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### 16 Credits

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### Fall 3rd Year

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- [ECE 30100 - Signals And Systems](#)
- [ECE 36200 - Microprocessor Systems And Interfacing](#)
- [ECE 36400 - Software Engineering Tools Laboratory](#)
- [ECE 40000 - Professional Development And Career Guidance](#)
- [MA 26500 - Linear Algebra](#)
- Foundational General Education Elective - Credit Hours: 3.00

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### 15 Credits

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### Spring 3rd Year

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- [ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering](#)
- [ECE 36900 - Discrete Mathematics For Computer Engineering](#)
- Computer Engineering Elective - Credit Hours: 4.00
- Computer Engineering Elective - Credit Hours: 3.00
- Foundational General Education Elective - Credit Hours: 3.00

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### 16 Credits

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### Fall 4th Year

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- [ECE 47700 - Digital Systems Senior Project](#)
- ECE General Educational Elective - Credit Hours: 3.00
- ECE General Educational Elective - Credit Hours: 3.00
- Complementary Elective - Credit Hours: 3.00
- Computer Engineering Elective - Credit Hours: 3.00

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### 16 Credits

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### Spring 4th Year

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- Computer Engineering Elective - Credit Hours: 6.00
- Engineering Breadth Elective - Credit Hours: 3.00
- ECE General Education Elective - Credit Hours: 3.00
- Complementary Elective - Credit Hours: 3.00

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### 15 Credits

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## Notes

- An overall GPA of 2.0 or higher in the Required Major Courses is required.
- All 30000-level and above courses applied towards the Required Major Courses must be completed at the Purdue West Lafayette campus.
- The pass/no pass (P/N) grade option, if available, may be used for courses taken to satisfy the ECE General Education and Complementary Elective Requirements. The P/N grade option cannot be used for courses applied towards the Required Major Courses, General Engineering Requirement, Mathematics Requirement, and the Science Requirement (unless P/N is the only allowed grade option for that course).

## Critical Course

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The ♦ course is considered critical. A Critical Course is one that a student must be able to pass to persist and succeed in a particular major.

## Disclaimer

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The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

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# Computer Engineering, BSCMPE

2019-2020 Requirements

## Degree Requirements

125 Credits Required

## Computer Engineering Major Courses (53 credits)

### Required Core Courses (30 credits)

ECE 20001 EE Fundamentals I	3.00
ECE 20007 - EE Fundamentals I Lab	1.00
ECE 20002 - EE Fundamentals II	3.00
ECE 26400 Advanced C Programming	3.00
ECE 20875 Python for Data Science	3.00
ECE 27000 Introduction To Digital System Design	4.00
ECE 30100 Signals And Systems	3.00
ECE 30200 Probabilistic Methods In Electrical And Computer Engineering	3.00
ECE 36200 Microprocessor Systems And Interfacing	4.00
ECE 36800 Data Structures	3.00

### Required Seminars (3 credits)

ECE 29401 - ECE Sophomore Seminar	1.00
ECE 39401 - Professional Communication and Diversity	1.00
ECE 49401 - Professional Communication Capstone	1.00

### Senior Design Requirement - Choose One Option (4 credits)

The CmpE Core Requirements listed above must be completed before taking Senior Design.

#### Option 1 (4 credits):

ECE 47700 Digital Systems Senior Project	4.00
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#### Option 2 (4 credits):

ECE 49022 Electrical Engineering Senior Design Projects	4.00
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### Option 3 (4 credits):

Must be taken in each of 2 consecutive semesters.

EPCS 41200 Senior Design Participation In EPICS	2.00
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## Computer Engineering Selectives (16 credits)

Select from the following list so that total credits for Required Major Courses is at least 53.

ECE 30834 Fundamentals Of Computer Graphics	3.00
ECE 30862 Object-Oriented Programming In C++ And Java	3.00
ECE 33700 ASIC Design Laboratory	2.00
ECE 40400 Introduction To Computer Security	3.00
ECE 43700 Computer Design And Prototyping	4.00
ECE 46100 Software Engineering	3.00
ECE 46900 Operating Systems Engineering	4.00
[After]	
ECE 46300 Introduction To Computer Communication Networks	3.00
[Right] or	
ECE 50863 Computer Network Systems	3.00
[After]	
ECE 46800 Introduction To Compilers And Translation Engineering	4.00
[Right] or	
ECE 57300 Compilers And Translator Writing Systems	3.00
[After]	
ECE 40862 Software For Embedded Systems	3.00
[Right] or	
ECE 56800 Embedded Systems	3.00
[After]	
ECE 47300 Introduction To Artificial Intelligence	3.00
[Right] or	
ECE 57000 Artificial Intelligence	3.00
[After]	
Maximum of 6 credits of Computer Engineering "Special Content" courses. (See the Additional Degree Requirements)	

## Other Department/Program Course Requirements (72 credits)

Students must complete the [First Year Engineering](#) Requirements (29-30 credits). CS 15900 is the preferred FYE Science Selective.

## General Engineering Requirement (3-6 credits)

### C Programming (0 -3 credits)

Required only if CS 15900 not taken as the FYE Science Selective.

CS 15900 Programming Applications For Engineers	3.00
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### Engineering Breadth Selective - Choose One (3 credits)

AAE 20300 Aeromechanics I	3.00
BME 20100 Biomolecules: Structure, Function, And Engineering Applications	3.00
CE 29700 Basic Mechanics I (Statics)	3.00
CE 35000 Introduction To Environmental And Ecological Engineering	3.00
CE 35300 Physico-Chemical Principles Of Environmental Engineering	4.00
CE 35500 Engineering Environmental Sustainability	3.00
CHE 20500 Chemical Engineering Calculations	4.00
EEE 35500 Engineering Environmental Sustainability	3.00
IE 33500 Operations Research - Optimization	3.00
IE 33600 Operations Research - Stochastic Models	3.00
ME 20000 Thermodynamics I	3.00
ME 27000 Basic Mechanics I	3.00
ME 41300 Noise Control	3.00
MSE 23000 Structure And Properties Of Materials	3.00
NUCL 20000 Introduction to Nuclear Engineering	3.00

## Mathematics Requirement - Choose One Option (13-14 credits)

Calculus I and II must be completed as part of the First Year Engineering Requirements.

### Option 1 (13 credits)

MA 26100 Multivariate Calculus	4.00
MA 26500 Linear Algebra	3.00
MA 26600 Ordinary Differential Equations	3.00
ECE 36900 Discrete Mathematics For Computer Engineering	3.00

## Option 2 (14 credits)

MA 26100 Multivariate Calculus	4.00
MA 26200 Linear Algebra And Differential Equations	4.00
ECE 36900 Discrete Mathematics For Computer Engineering	3.00
[After]	
[Before] <b>Advanced Math Selective</b> - Choose One (3 credits)	
MA 30300 Differential Equations And Partial Differential Equations For Engineering And The Sciences	3.00
MA 35100 Elementary Linear Algebra	3.00
MA 38500 Introduction To Logic	3.00
MA 42500 Elements Of Complex Analysis	3.00
MA 51000 Vector Calculus	3.00
CS 31400 Numerical Methods	3.00

## Science Requirement (4-8 credits)

Physics I and General Chemistry are part of the First Year Engineering Requirements. If an FYE Science Selective other than CS 15900 is selected, it will satisfy the ECE Science Selective requirement below.

PHYS 27200 Electric And Magnetic Interactions	4.00
<b>ECE Science Selective</b> - Choose One	
BIOL 11000 Fundamentals Of Biology I	4.00
BIOL 11100 Fundamentals Of Biology II	4.00
BIOL 12100 Biology I: Diversity, Ecology, And Behavior and BIOL 13500 First Year Biology Laboratory	2.00
BIOL 13100 Biology II: Development, Structure, And Function Of Organisms	3.00
CHM 12400 General Chemistry For Engineers II	4.00
PHYS 31000 Intermediate Mechanics	4.00
PHYS 32200 Intermediate Optics	3.00
PHYS 34200 Modern Physics	3.00
PHYS 34400 Modern Physics	4.00

## ECE General Education Requirement (18 credits)

While a comprehensive understanding of science and mathematics is central and foundational to effective engineering practice, real-world engineering problems are both complex and situated within dynamic social, political, and cultural contexts. Therefore, well-rounded engineering

curricula must also include courses that encompass the breadth of human experience and culture, both past and present. Such courses may include, but are not limited to, those that explore individual behavior, social and political structures, aesthetic values, modes and dynamics of communication, philosophical and ethical thought, and cognitive processes. These types of courses provide engineering students with a framework for rational inquiry, critical evaluation, and judgment when dealing with issues that are non-quantifiable, ambiguous, and/or controversial. In addition, they offer engineering students the opportunity to develop interests and insights that will deepen their appreciation for the diversity of the world in which they live and work.

Based on these premises, the goals of the ECE General Education Program are to

- Provide the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- Support and complement the technical content of the engineering curricula through coursework that emphasizes such skills as written communication, oral communication, information literacy, cultural awareness, leadership, innovation, entrepreneurship, and managing change.

These goals are consistent with the objectives of the College of Engineering's Engineer of 2020 initiative (Engineering Faculty Document 15-06), as well as the objectives of Purdue University's Undergraduate Outcomes-Based Curriculum (University Senate Document 11-7).

To these ends, all B.S. students in Electrical and Computer Engineering are required to complete the ECE General Education Program described below. This program is consistent with the College of Engineering General Education Program (Engineering Faculty Documents 43-13 and 39-14).

## Foundational General Education Electives

Students must select from the list of courses approved by the University Curriculum Council (UCC) to satisfy each of the following six Foundational Learning Outcomes of the University Core Requirements (click [here](#)) - the Science and Quantitative Reasoning Foundational Outcomes are satisfied elsewhere in the BSCMPE curriculum. Some courses may have been approved to meet more than one of the Foundational Learning Outcomes, so fewer than six courses can be used to fulfill this condition. There is no minimum number of credit hours needed to satisfy this component of the College of Engineering General Education Program. If a course taken to fulfill some other EE/CMPE degree requirement has also been approved as satisfying one or more of these Engineering Foundational Learning Outcomes, then those Engineering Foundational Learning Outcomes need not be satisfied again within the ECE General Education Program. Students must earn a grade of C- or better in courses used to satisfy this component of the ECE General Education Program. The pertinent Foundational Learning Outcomes are defined as follows:

- Written Communication (satisfied as an FYE requirement)
- Oral Communication (satisfied as an FYE requirement)
- Information Literacy (satisfied as an FYE requirement)
- Human Cultures: Humanities
- Human Cultures: Behavioral/Social Science
- Science, Technology & Society

## ECE General Education Electives

Students must take additional approved courses to reach the minimum requirement of 18 credit hours. Other courses, as approved by the ECE Curriculum Committee, may also be selected. See Additional Degree Requirements below to see the list of approved courses.

## Advanced Level General Education Requirement

At least 6 of the 18 credit hours needed to satisfy the ECE General Education Requirement must come from courses at the 30000-level or above, or from courses with a required prerequisite in the same department.

## Educational Diversity Requirement

At least 12 credit hours of the 18 credit hours needed to satisfy the ECE General Education Requirement must be taken from the College of Liberal Arts, the Krannert School of Management, and/or the Honors College - provided such courses are not focused primarily on engineering, technology, the natural sciences, or mathematics. The subject areas associated with these colleges and school are:

- College of Liberal Arts: AAS, AD, AMST, ANTH, ARAB, ASL, CHNS, CLCS, CMPL, COM, DANC, ENGL, FR, GER, GREK, HEBR, HIST, IDIS, ITAL, JPNS, JWST, LATN, LC, LING, MARS, MUS, PHIL, POL, PTGS, REL, RUSS, SOC, SPAN, THTR, WGSS
- Krannert School of Management: ECON, ENTR, MGMT
- Honors College: HONR

## Complementary Electives (up to 2 credits)

Choose additional coursework to bring total credits to the minimum 125 required for the BSCMPE degree. Students should carefully select these courses to complement their personal interests and their academic record.

All courses, except those specifically excluded by the ECE Curriculum Committee, may be used as Complementary Electives (See Additional Degree Requirements below to view list).

## Additional Requirements

- [Electrical and Computer Engineering General Education](#)
- [Computer Engineering "Special Content" Courses](#)
- [Electrical and Computer Engineering No Count List](#)

## University Core Requirements



- Human Cultures Humanities
- Human Cultures Behavioral/Social Science
- Information Literacy
- Science #1
- Science #2
- Science, Technology, and Society
- Written Communication
- Oral Communication
- Quantitative Reasoning

For a complete listing of course selectives, visit the [Provost's Website](#).

### Prerequisite Information:

For current pre-requisites for courses, click [here](#).

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## First Year Engineering Program Requirements

### Fall 1st Year

ENGR 13100 Transforming Ideas To Innovation I ♦	2.00
CHM 11500 General Chemistry♦	4.00
MA 16500 Analytic Geometry And Calculus I	4.00
Written Communication Selective ♦ - Credit Hours: 3.00-4.00 ( <a href="#">Satisfies Written Communication for Core</a> )	

### 13-14 Credits

### Spring 1st Year

ENGR 13200 Transforming Ideas To Innovation II ♦	2.00
MA 16600 Analytic Geometry And Calculus II ♦	4.00
PHYS 17200 Modern Mechanics♦	4.00
Oral Communication Selective ♦ - Credit Hours: 3.00 ( <a href="#">Satisfies Oral Communication for Core</a> )	

Science Selective ♦ - Credit Hours: 3.00

**16 Credits**

### Computer Engineering Program Requirements

Combined with two semesters for FYE above, the following is an example of a 4-year plan that satisfies the BSCMPE degree requirements. It assumes that CS 15900 and a 4 credit hour Written Communication Foundational Core course were taken in the First Year.

#### Fall 2nd Year

ECE 29401 - ECE Sophomore Seminar [Left]	1.00
ECE 20001 - EE Fundamentals I ♦	3.00
ECE 20007 - EE Fundamentals I Lab	1.00
ECE 26400 Advanced C Programming ♦	3.00
MA 26100 Multivariate Calculus ♦	4.00
PHYS 27200 Electric And Magnetic Interactions	4.00

**16 Credits**

#### Spring 2nd Year

ECE 20002 - EE Fundamentals II ♦	3.00
ECE 20875 Python for Data Science	3.00
ECE 27000 Introduction To Digital System Design ♦	4.00
MA 26600 Ordinary Differential Equations	3.00
Foundational General Education Elective	3.00

**16 Credits**

#### Fall 3rd Year

ECE 30100 Signals And Systems	3.00
ECE 36200 Microprocessor Systems And Interfacing	4.00
ECE 36800 Data Structures	3.00

ECE 39401 - Professional Communication and Diversity	1.00
ECE Science Selective	3.00
Foundational General Education Elective	3.00

**17 Credits**

### Spring 3rd Year

ECE 30200 Probabilistic Methods In Electrical And Computer Engineering	3.00
Computer Engineering Selectives	7.00
ECE 36900 Discrete Mathematics For Computer Engineering	3.00
Foundational General Education Elective	3.00

**16 Credits**

### Fall 4th Year

ECE 47700 Digital Systems Senior Project	4.00
Computer Engineering Selective	3.00
MA 26500 Linear Algebra	3.00
ECE General Education Elective	3.00
Complementary Elective	1.00

**14 Credits**

### Spring 4th Year

Computer Engineering Selectives - Credit Hours: 6.00
ECE 49401 - Professional Communication Capstone - Credit Hours: 1.00
Engineering Breadth Elective - Credit Hours: 3.00
ECE General Education Electives - Credit Hours: 6.00

**16 Credits**

## Notes

- An overall GPA of 2.0 or higher in the Required Major Courses is required.
- All 30000-level and above courses applied towards the Required Major Courses must be completed at the Purdue West Lafayette campus.
- The pass/no pass (P/N) grade option, if available, may be used for courses taken to satisfy the ECE General Education and Complementary Elective Requirements. The P/N grade option cannot be used for courses applied towards the Required Major Courses, General Engineering Requirement, Mathematics Requirement, and the Science Requirement (unless P/N is the only allowed grade option for that course).

## Critical Course

*The ♦ course is considered critical. A Critical Course is one that a student must be able to pass to persist and succeed in a particular major.*

## Disclaimer

*The student is ultimately responsible for knowing and completing all degree requirements.*

*The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.*