TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Electrical and Computer Engineering

RE: Change in degree requirements for the Bachelor of Science in Computer Engineering (B.S.CmpE) effective for students entering Purdue Fall 2018 and later.

The faculty of the School of Electrical and Computer Engineering has approved the following change in the B.S.CmpE degree requirements. This action is now submitted to the Engineering Faculty with a recommendation for approval.

> **From:**   See Attachment #1, pages 2-9.
>
> **To:**   See Attachment #2, pages 10-20.

> **Reason:** The Required Major Courses for the B.S.CmpE degree has been modified to provide more flexibility for students in the selection of courses. The current degree requirements only allow students to choose between one of two advanced selectives (ECE 46800 and 46900) and to select one computer engineering elective from a short list of approved courses. The proposed B.S.CmpE degree requirements reduces the number of explicitly required ECE courses and allows for 16 credits of computer engineering selectives that draw from a broader set of ECE courses (as well as EPCS courses). The current degree requirements are a possible option within the proposed degree requirements.
>
> Further, the restrictions for the Complementary Electives (up to 6 credits of the 125 total credits required for the degree) have been substantially simplified.

V. Balakrishnan, Head
School of Electrical and Computer Engineering

Purdue University   2017-2018 University Catalog

Computer Engineering, BSCMPE

About the Program

Electrical and Computer engineering encompasses all areas of research, development, design, and operation of electrical and electronic systems and their components, including software. Emphasis in such varied areas as bioengineering, circuit theory, communication sciences, computers and automata, control systems, electromagnetic fields, energy sources and systems, and materials and electronic devices is available. Two degree programs are offered by the School: Bachelor of Science in Electrical Engineering (BSEE) and Bachelor of Science in Computer Engineering (BSCmpE).

Engineers in both fields must have a strong background in mathematics and physics, a broad base in the humanities, and a command of the English language in order to provide the scope of knowledge essential for optimum professional growth. The curriculum offered by the School of Electrical and Computer Engineering meets these objectives.

Graduates from the School of Electrical and Computer Engineering are sought after by all major industries. Electrical engineers hold many unusual and challenging positions in the aerospace, chemical, nuclear, automotive, medical, metallurgical, textile, railway, petroleum, and other basically non-electrical industries, as well as in computers, electronics, communications, power, and other electrical industries. Their professional roles span industrial activity, research, development, design, production, marketing, operation, field testing, and maintenance of many types of equipment for government, industry, farm, and home.

Two degree programs are offered by the school:

Electrical Engineering encompasses the development, design, research, and operation of electrical and electronic systems and components. Disciplines include VLSI and circuit design, communication and signal processing, computer engineering, automatic control, fields and optics, energy sources and systems, and microelectronics and nanotechnology.

Computer Engineering is a specialization within electrical and computer engineering offering an in-depth education in both hardware and software aspects of modern computer systems.

Electrical and Computer Engineering provides students with a versatile education that will prove valuable looking toward a professional future. Along with problem-solving and design skills, students develop a strong foundation in math, science, and core electrical/computer engineering fundamentals. This skillset prepares them for research and development positions in industry, management, sales, teaching, medical school, and law school.

At Birck Nanotechnology Center, engineers and scientists conduct research in emerging fields where new materials and tiny structures are built atom by atom or molecule by molecule.

Degree Requirements

125 Credits Required

Major Courses (49 credits)

(An overall 2.0 cumulative GPA or better in these courses is required)

Required ECE Courses (35 credits)

- ECE 20000 - Electrical And Computer Engineering Seminar

- ECE 20100 - Linear Circuit Analysis I
- ECE 20200 - Linear Circuit Analysis II
- ECE 20700 - Electronic Measurement Techniques
- ECE 20800 - Electronic Devices And Design Laboratory
- ECE 25500 - Introduction To Electronic Analysis And Design
- 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 33700 - ASIC Design Laboratory
- ECE 36200 - Microprocessor Systems And Interfacing
- ECE 36400 - Software Engineering Tools Laboratory
- ECE 36800 - Data Structures
- ECE 40000 - Professional Development And Career Guidance

Advanced CmpE Requirement (8 credits)

- ECE 43700 - Computer Design And Prototyping
  and
- ECE 46800 - Introduction To Compilers And Translation Engineering
  or
- ECE 46900 - Operating Systems Engineering

Senior Design (3-4 credits)

- ECE 47700 - Digital Systems Senior Project or
- ECE 49022 - Electrical Engineering Senior Design Projects or

- EPCS 41100 - Senior Design Participation In EPICS and
- EPCS 41200 - Senior Design Participation In EPICS (taken in 2 consecutive semesters)
  or
  Two Consecutive Semesters of EPCS 41200 - Senior Design Participation In EPICS

Computer Engineering Selective (2-3 credits)

Select from the attached list of courses.

Other Department/Program Course Requirements (76 credits)

General Engineering Requirement (10 credits)

- ENGR 13100 - Transforming Ideas To Innovation I
- ENGR 13200 - Transforming Ideas To Innovation II
- CS 15900 - Programming Applications For Engineers

  Engineering Breadth Selective - *Select one of:*
- 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 (21-22 credits)

Choose one of the following 2 options:

Option 1 (21 credits)

- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning Foundational Outcome of the University Core)
- ECE 36900 - Discrete Mathematics For Computer Engineering
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus
- MA 26500 - Linear Algebra
- MA 26600 - Ordinary Differential Equations

Option 2 (22 credits)

- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning Foundational Outcome of the University Core)
- ECE 36900 - Discrete Mathematics For Computer Engineering
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus
- MA 26200 - Linear Algebra And Differential Equations

Advanced Math Selective - *Select one of:*
- 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 (15-16 credits)

- CHM 11500 - General Chemistry (satisfies Science Foundational Outcome of the University Core)
- PHYS 17200 - Modern Mechanics (satisfies Science Foundational Outcome of the University Core)
- PHYS 27200 - Electric And Magnetic Interactions

Science Selective - *Select one of:*
- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- 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)

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 Learning Outcomes

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 (see below) - 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
- 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 24 credit hours. These courses must be drawn from those offered by the departments of Agricultural Economics, Speech, Language, and Hearing Sciences, Child Development and Family Studies, Communication, Economics, English, Entrepreneurship, Foreign Languages and Literatures, History, Interdisciplinary Studies, Management, Philosophy, Political Sciences, Psychological Sciences, Sociology and Anthropology, Visual and Performing Arts. Any course offered by these departments is allowable, provided that it is open to students in the offering department and is not focused primarily on professional training, natural science or mathematics. Other courses, as approved by the ECE Curriculum Committee, may also be selected. The list of approved courses is attached.

Advanced Level General Education Requirement

At least 6 credit hours 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 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.

Complementary Electives (up 6 credits)

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

Applicable Complementary Electives

- Any course that would otherwise satisfy a specific degree requirement (i.e., ECE Requirements, General Engineering, Mathematics Requirement, Science Requirement, and General Education Requirement), but is in excess of the minimum credits for that requirement, can be used as a Complementary Elective.
- ECE 19000 taken prior to acceptance into ECE.
- Courses taken to satisfy a minor requirement (unless that course is excluded below).
- One (1) credit per semester of ROTC, up to a maximum of six (6) credit hours.
- One (1) credit per semester of BAND, up to a maximum of six (6) credit hours.
- 2 credits of CGT taken while enrolled in FYE.
- Exploratory FYE (ENGR) courses.
- Seminar courses, including FYE seminars [limited to 3 credit hours]
- Activity courses (such as Engineering Ambassadors and First Robotics) [only a single instance of the course is applicable].
- Up to 2 credits total in two different PES courses [no more than 1 credit per course is applicable]
- Courses explicitly approved by the ECE Curriculum Committee.

Exclusions

- pre-calculus Mathematics (MA) courses.
- Statistics (STAT) courses without a calculus prerequisite.
- CS courses not intended for engineering students - for example, CS 11000.
- General Studies (GS) courses (however, credit for GS 10000 and GS 10100 are accepted as ECE General Education Electives).
- Courses from the College of Technology that have not been specifically approved by the ECE Curriculum Committee.

- Courses from the College of Health and Human Sciences that have not been specifically approved by the ECE Curriculum Committee.
- Courses from the College of Education that have not been specifically approved by the ECE Curriculum Committee.

  [Note: UCC approved courses will still satisfy the University Core, but the credit hours are not applicable to BSEE degree requirements]

Excluded Courses

Some courses specifically excluded as complementary electives (not a comprehensive list):

- CS 11000
- CS 17700
- ECE 19000 taken after admission into ECE
- MGMT 20010
- STAT 11300 (IL Foundational Outcome satisfied, but credit hours are not applied to degree requirements)
- STAT 30100 (IL Foundational Outcome satisfied, but credit hours are not applied to degree requirements)

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.

Additional Degree Requirements

Select Approved Computer Engineering Electives, ECE General Education Electives, or Pass-No Pass for additional lists.

Program Requirements

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

Fall 1st Year

- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16500 - Analytic Geometry And Calculus I
- CS 15900 - Programming Applications For Engineers
- Oral Communication Foundational Outcome - Credit Hours: 3.00 *
- CHM 11500 - General Chemistry *

16 Credits

Spring 1st Year

- ENGR 13200 - Transforming Ideas To Innovation II
- PHYS 17200 - Modern Mechanics *
- MA 16600 - Analytic Geometry And Calculus II
- Foundational Gen Ed - Credit Hours: 3.00 *
- Written Communication Foundational Outcome - Credit Hours: 3.00 *

16 Credits

Fall 2nd Year

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

15 Credits

Spring 2nd Year

- 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

16 Credits

Fall 3rd Year

- ECE 20800 - Electronic Devices And Design Laboratory
- ECE 25500 - Introduction To Electronic Analysis And Design
- ECE 30100 - Signals And Systems
- ECE 36200 - Microprocessor Systems And Interfacing
- ECE 40000 - Professional Development And Career Guidance
- Foundational Gen Ed - Credit Hours: 3.00 *

15 Credits

Spring 3rd Year

- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- ECE 33700 - ASIC Design Laboratory
- ECE 36400 - Software Engineering Tools Laboratory

- ECE 36900 - Discrete Mathematics For Computer Engineering
- Foundational GenEd - Credit Hours: 3.00 *
- Foundational GenEd - Credit Hours: 3.00 *

15 Credits

Fall 4th Year

- ECE 43700 - Computer Design And Prototyping

  or

- ECE 46800 - Introduction To Compilers And Translation Engineering

- ECE 47700 - Digital Systems Senior Project
- MA 26500 - Linear Algebra
- Complementary Elective - Credit Hours: 3.00
- ECE Gen Ed Elective - Credit Hours: 3.00

17 Credits

Spring 4th Year

- ECE 43700 - Computer Design And Prototyping

  or

- ECE 46900 - Operating Systems Engineering

- Computer Engineering Elective - Credit Hours: 2.00
- Engr. Breadth Elective - Credit Hours: 3.00
- ECE Gen Ed Elective - Credit Hours: 3.00
- Complementary Elective - Credit Hours: 3.00

15 Credits

Notes

* Satisfies a University Core Requirement

2.0 ECE and Graduation GPA required for Bachelor of Science degree.

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.

Computer Engineering, BSCMPE

Degree Requirements

125 Credits Required

Required Major Courses (49 credits minimum)

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)

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)

ECE 20000 Electrical And Computer Engineering Seminar
ECE 40000 Professional Development And Career Guidance

Senior Design Requirement (3 credits minimum)

The CmpE Core Requirements listed above are prerequites for Senior Design. Choose one of the following options:

Option 1 (4 credits):

ECE 47700 Digital Systems Senior Project

Option 2 (4 credits):

Option 3 (3 credits):

Must be taken in conscutive semesters.

> EPCS 41100 Senior Design Participation In EPICS
> EPCS 41200 Senior Design Participation In EPICS

Option 4 (4 credits):

Must be taken in each of 2 consective semesters.

> EPCS 41200 Senior Design Participation In EPICS

Computer Engineering Selectives (16 credits minimum)

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]
> Up to 6 credits of Computer Engineering "Special Content" courses

Computer Engineering "Special Content" Courses:

> ECE 20800 Electronic Devices And Design Laboratory
> ECE 25500 Introduction To Electronic Analysis And Design
> ECE 27900 Sophomore Participation In Vertically Integrated Projects In Electrical And Computer Engineering
> ECE 29600 Electrical And Computer Engineering Projects
> ECE 37900 Junior Participation In Vertically Integrated Projects (VIP) In Electrical And Computer Engineering
> ECE 39600 Industrial Practice Seminar I

ECE 47900 Senior Participation In Vertically Integrated Projects (VIP) In Electrical And Computer Engineering

ECE 49600 Electrical And Computer Engineering Projects

EPCS 20100 Sophomore Participation In EPICS

EPCS 20200 Sophomore Participation In EPICS

EPCS 30100 Junior Participation In EPICS

EPCS 30200 Junior Participation In EPICS

EPCS 40100 Senior Participation In EPICS

EPCS 40200 Senior Participation In EPICS

Any 40000-level ECE course (unless specifically excluded)

Any 50000-level ECE course (unless specifically excluded)

Other Department/Program Course Requirements (76 credits minimum)

General Engineering Requirement (10 or 14 credits)

Choose an Introductory Engineering Option and one Engineering Breadth Selective.

Introductory Engineering Options (7 or 11 credits)

Choose one of the following options:

Option 1 (7 credits):

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)

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 [prior to Fall 2017] (7 credits)

ENGR 14100/14200 includes the eqivalent of CS 15900.

ENGR 14100 Honors Creativity And Innovation In Engineering Design I

ENGR 14200 Honors Creativity And Innovation In Engineering Design II

Option 4 - Honors [Fall 2017 and later] (11 credits)

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 (3 credits)

Select one of the following:

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 (21 credits minimum)

Choose one of the following 2 options:

Option 1 (21-23 credits)

[MA 16500 Analytic Geometry And Calculus I or
MA 16100 Plane Analytic Geometry and Calculus I]
(satisfies Quantitative Reasoning in the University Core Requirements)

[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)

[MA 16500 Analytic Geometry And Calculus I or
MA 16100 Plane Analytic Geometry and Calculus I]
(satisfies Quantitative Reasoning in the University Core Requirements)

[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 - *Select one of:*

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)

- 11 credits minimum if Introductory Engineering Option 4 was selected (contains the equivilent of PHYS 17200]
- 15 credits minimum if Introductory Engineering Option 1, 2, or 3 was selected.

CHM 11500 General Chemistry
(satisfies a Science #1 in the University Core Requirements)

PHYS 17200 Modern Mechanics
(satisfies a Science #2 in the University Core Requirements; not required if Introductory Engineering Option 4 was selected)

PHYS 27200 Electric And Magnetic Interactions

Science Selective - *Select one of:*
BIOL 11000 Fundamentals Of Biology I
BIOL 11100 Fundamentals Of Biology II
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 minimum)

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 Learning Outcomes

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 (see below) - 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

Students must take additional approved courses to reach the minimum requirement of 24 credit hours. These courses must be drawn from those offered by the departments of

Agricultural Economics, Speech, Language, and Hearing Sciences, Child Development and Family Studies, Communication, Economics, English, Entrepreneurship, Foreign Languages and Literatures, History, Interdisciplinary Studies, Management, Philosophy, Political Sciences, Psychological Sciences, Sociology and Anthropology, Visual and Performing Arts. Any course offered by these departments is allowable, provided that it is open to students in the offering department and is not focused primarily on professional training, natural science or mathematics. Other courses, as approved by the ECE Curriculum Committee, may also be selected. The list of approved courses is attached.

Advanced Level General Education Requirement

At least 6 credit hours 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 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.

Complementary Electives (up 6 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 Elecives (see attached 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.

Additional Degree Requirements

- 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 Eletive 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).

Program Requirements

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

Fall 1st Year

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 Gen Ed - Credit Hours: 3.00 *

16 Credits

Spring 1st Year

ENGR 13200 Transforming Ideas To Innovation II
PHYS 17200 Modern Mechanics
*

MA 16600 Analytic Geometry And Calculus II
SCLA 10200 Transformative Texts, Critical Thinking And Communication II: Modern World
*

CS 15900 Programming Applications For Engineers

16 Credits

Fall 2nd Year

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

Spring 2nd Year

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

16 Credits

Fall 3rd Year

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 Gen Ed - Credit Hours: 3.00 *

15 Credits

Spring 3rd Year

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 GenEd - Credit Hours: 3.00 *

16 Credits

Fall 4th Year

ECE 47700 Digital Systems Senior Project
Computer Engineering Elective - Credit Hours: 3.00

ECE Gen Ed Elective - Credit Hours: 3.00

ECE Gen Ed Elective - Credit Hours: 3.00

Complementary Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

Computer Engineering Elective - Credit Hours: 3.00

Computer Engineering Elective - Credit Hours: 3.00

Engr. Breadth Elective - Credit Hours: 3.00

ECE Gen Ed Elective - Credit Hours: 3.00

Complimentary Elective - Credit Hours: 3.00

15 Credits

Notes

* Satisfies a University Core Requirement

2.0 ECE and Graduation GPA required for Bachelor of Science degree.

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.