PURDUE
UNIVERSITY

Electrical Engineering
College of Engineering

Code: ECEB
124 Credits
Students must earn an overall graduation GPA of at least 2.000

https://engineering.purdue.edu/ECE/Academics/Undergraduates/UGO/Curriculum_Resources/BSEE-Fall_2013/BSEE_Degree_Information

Major Courses (47 credits) [An overall 2.000 cumulative GPA or better in these courses is required]

Required ECE Courses (28 cr.)

____	(0)	ECE 20000 ECE Sophomore Seminar	(4)	ECE 27000 Introduction to Digital System Design
____	(3)	ECE 20100 Linear Circuit Analysis I	(3)	ECE 30100 Signals and Systems
____	(3)	ECE 20200 Linear Circuit Analysis II	(3)	ECE 30200 Probabilistic Methods in ECE
____	(1)	ECE 20700 Electronic Measurement Techniques	(3)	ECE 31100 Electric & Magnetic Fields
____	(1)	ECE 20800 Electronic Devices and Design Lab	(1)	ECE 40000 Pro. Development and Career Guidance
____	(3)	ECE 25500 Electronic Circuit Analysis and Design	(3)	ECE 40200 Electrical Engineering Design Projects

Adv. EE Selectives - Select 3 of the following courses (9-11 cr.)

____	(3)	ECE 30500 Semiconductor Devices	(3)	ECE 32100 Electromechanical Motion Devices
____	(4)	ECE 36200 Microprocessor Systems and Interfacing	(3)	ECE 38200 Feedback System Analysis and Design
____	(4)	ECE 43800 Digital Signal Processing OR ECE 44000 Transmission of Information		

Other Electrical Engineering Course Requirements (8-10 cr.)
(Must include 3 upper level labs – fewer if chosen Adv EE Selectives include ECE 36200 and/or ECE 43800/44000)

____ ( ) _____   ____ ( ) _____   ____ ( ) _____   ____ ( ) _____

Other Department/Program Course Requirements (67 credits)

General Engineering Requirement (10 cr.)

____	(2)	ENGR 13100 Transforming Ideas to Innovation I	(2)	ENGR 13200 Transforming Ideas to Innovation II
____	(3)	CS 15900 C Programming for Engineers		
____	(3)	Engineering Breadth Selective (see link above)		

Mathematics Requirement (18 cr.)

____	(4)	MA 16500 Analytic Geometry and Calculus I (satisfies *Quantitative Reasoning Selective* for core)		
____	(4)	MA 16600 Analytic Geometry and Calculus II	(4)	MA 26100 Multivariate Calculus
____	(3)	MA 26600 Ordinary Differential Equations	(3)	MA 26500 Linear Algebra

Science Requirement (15 cr.)

____	(4)	CHM 11500 General Chemistry *(satisfies Science Selective for core)*
____	(4)	PHYS 17200 Modern Mechanics *(satisfies Science Selective for core)*
____	(4)	PHYS 27200 Electric and Magnetic Interactions
____	(3)	ECE Science Selective (see link above)

ECE General Education Requirement (24 cr.) (see link above)

Foundational Core (http://www.purdue.edu/provost/initiatives/curriculum/course.html)

____	(3)	_____ *(satisfies Written Communication for core)*
____	(3)	_____ *(satisfies Oral Communication for core)*
____	(3)	_____ *(satisfies Human Cultures: Humanities for core)*
____	(3)	_____ (satisfies Human Cultures: Behavioral/Social Science for core)
____	(3)	_____ (satisfies Science, Technology & Society Selective for core)

ECE General Education Electives (https://engineering.purdue.edu/ECE/Academics/Undergraduates/UGO/CourseInfo/coursesGEE#LIST)

____ ( ) _____   ____ ( ) _____   ____ ( ) _____

Complimentary Electives (10 credits) (https://engineering.purdue.edu/ECE/Academics/Undergraduates/UGO/Curriculum_Resources/ECE_Compl_Electives)

____ ( ) _____   ____ ( ) _____   ____ ( ) _____   ____ ( ) _____

University Core Requirements (included above) (http://www.purdue.edu/provost/initiatives/curriculum/course.html)

Human Cultures Humanities	☐ _____		*Science, Technology & Society Selective*	☐ _____
Human Cultures Behavioral/Social Science	☐ _____		*Written Communication*	☐ _____
Information Literacy	☐ _____		*Oral Communication*	☐ _____
Science Selective	☐ _____		*Quantitative Reasoning*	☐ _____
Science Selective	☐ _____			

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

Degree Works is knowledge source for specific requirements and completion

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Electrical Engineering

Suggested Arrangement of Courses:

Credits	Fall 1st Year	Prerequisite	Credits	Spring 1st Year	Prerequisite
2	ENGR 13100**	MA 16100/16500 (taken concurrently)	2	ENGR 13200**,#	ENGR 13100
4	MA 16500*,#		4	MA 16600**	MA 16100 or 16500 (Min grade of C-)
3	CS 15900**	ENGR 13100 (taken concurrently)	4	PHYS 17200*	MA 16100 or 16500 (taken concurrently
4	CHM 11500*	MA 16100 or 16500 (taken concurrently)	3	Writ Com Fnd Outcome*	Depends on choice of course
3	Oral Com Fnd Outcome*	Depends on choice of course	3	Foundational Gen Ed*	Depends on choice of course
16			**16**		

Credits	Fall 2nd Year	Prerequisite	Credits	Spring 2nd Year	Prerequisite
0	ECE 20000	Soph Standing	3	ECE 20200#	ECE 20100 (Min Grade of C); MA 26200/26600 (taken concurrently)
3	ECE 20100#	ENGR 13100, PHYS 17200, MA 16200/16600 (Min grade of C-)	1	ECE 20800	ECE 20700, ECE 25500 (taken concurrently
1	ECE 20700	ECE 20100 (taken concurrently)	3	ECE 25500#	ECE 20100 (Min grade of C), MA 26100
4	MA 26100**,#	MA 16200 or 16600 (Min grade of C-)	3	ECE Sci Selective**	Depends on choice of course
4	PHYS 27200**	PHYS 17200, MA 16200 or 16600 (taken concurrently)	3	MA 26600**	MA 26100 (Min grade of C-)
3	Foundational Gen Ed*	Depends on choice of course	3	Foundational Gen Ed*	Depends on choice of course
15			**16**		

Credits	Fall 3rd Year	Prerequisite	Credits	Spring 3rd Year	Prerequisite
4	ECE 27000	ECE 20100 (taken concurrently)	3	ECE 30200	MA 26200 or 26600, ECE 30100 (taken concurrently)
3	ECE 30100	ECE 20200 (min grade of C), MA 26200 or 26600	3	ECE 31100	ECE 20100, PHYS 27200, MA 26200 or 26600
1	ECE 40000	ECE 20000, Sem. Class. of 5 or higher	3	Adv. EE Selective	Depends on choice of course
3	Adv. EE Selective	Depends on choice of course	1	ECE Elective (lab)	Depends on choice of course
1	ECE Elective	Depends on choice of course	3	MA 26500**	MA 16200 or 16600, MA 26100 (taken concurrently) (Min grade of C-)
3	Complementary Elect**	Depends on choice of course	3	ECE Gen Ed Elective**	Depends on choice of course
15			**16**		

Credits	Fall 4th Year	Prerequisite	Credits	Spring 4th Year	Prerequisite
3	ECE 40200	EE Core curriculum	4	Adv. EE Selective w/lab	Depends on choice of course
3	ECE Elective	Depends on choice of course	4	ECE Elective w/lab	Depends on choice of course
3	ECE Gen Ed Elective**	Depends on choice of course	3	ECE Gen Ed Elective**	Depends on choice of course
3	Complementary Elect**	Depends on choice of course	4	Complementary Elect**	Depends on choice of course
3	Engr. Breadth Ele.**	Depends on choice of course			
15			**15**		

*Satisfies a University Core Requirement
**Satisfies a Non-departmental Major Course Requirement
#Indicates Critical Course

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

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

Degree Works is knowledge source for specific requirements and completion

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Revised 4/2016 (effective Fall 2013)

PURDUE

Electrical and Computer Engineering (https://engineering.purdue.edu/ECE)

Guidelines for ECE Complementary Electives

Both the BSEE and BSCmpE degrees require students to choose additional coursework to bring their total credits to the minimum required for their chosen degree (124 credits for the BSEE and 125 credits for the BSCmpE). Students should carefully choose these courses to complement their personal interests and their academic record. If in doubt as to whether or not a specific course qualifies as a Complementary Elective, please consult with an ECE Academic Advisor.

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)
- Leadership FYE (ENGR) courses/seminars (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.
- 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 approves courses will still satisfy the Foundational Outcomes, but the credit hours are not applicable to BSEE/BSCmpE degree requirements]

Excluded Courses

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

- CS 11000
- CS 17700
- ECE 19000 taken after admission int 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)

BSCmpE Degree Minimum Requirements

Introduction

The Bachelor of Science in Computer Engineering degree requires a total of 125 credit hours and a minimum Graduation Index of 2.0. Students must qualify for admission into the School of Electrical and Computer Engineering by completion of the First-Year Engineering Program.

ECE Requirements (49 credit hours):

CmpE Core Curriculum (34 credit hours): ECE 20100, 20200, 20700, 20800, 25500, 26400, 27000, 30100, 30200, 33700, 36200, 36400, and 36800.

ECE Seminars (1 credit hour): ECE 20000 and 40000.

Advanced CmpE Requirement (8 credit hours): ECE 43700 and either 46800 or 46900.

Senior Design Requirement (3-4 credit hours): ECE 40200, 47700 (taken in one semester) or at least 3 credit hours of EPCS 41100/41200 (taken over 2 consecutive semesters). A prerequisite for all Senior Design courses is completion of the EE Core Curriculum. Some Senior Design Courses may have additional prerequisites.

CmpE Electives (2-3 credit hours): Additional approved *CmpE Electives* to bring total ECE credit hours to at least 49.

Major-Area GPA: A GPA of 2.0 or higher in the ECE courses taken to satisfy the ECE Requirements is required to qualify for graduation with the BSCmpE degree.

General Engineering (7-9 credit hours):

Introduction to Engineering (4-6 credit hours): ENGR 19500/13100 (Transforming Ideas to Innovation I) & ENGR 19500/13200 (Transforming Ideas to Innovation II) **OR** ENGR 19500 (Creativity & Innovation in Engineering I) & ENGR 19500 (Creativity & Innovation in Engineering II) **OR** ENGR 10000 (First-Year Engineering Lectures) & ENGR 12600 (Engineering Problem Solving and Computer Tools)

Engineering Breadth Requirement (3 credit hours): Choose one (1) course from the approved *Engineering Breadth Requirement* list.

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Mathematics Requirement (21-22 credit hours):

Choose one of the Math options below. If MA 16100 and/or MA 16200 are taken in place of MA 16500 and/or MA 16600, only 4 of the 5 credit hours for each course can be applied to degree requirements.

Option 1 (21 credits hours): MA 16500, 16600, 26100, 26600, 26500 and ECE 36900.

Option 2 (22 credit hours): MA 16500, 16600, 26100, 26200, ECE 36900, and one of: MA 30300, 30400, 35100, 36200, 38500, 42500, 51000, or CS 31400.

Science Requirement (18-19 credit hours):

CS 15900, CHM 11500/12300, PHYS 17200, and PHYS 27200 and one of the **Science Selectives**: BIOL 11000, BIOL 11100, CHM 11600/12400, PHYS 31000, PHYS 32200, PHYS 34200.

Liberal Arts Requirement (24-25 credit hours):

Communication Skills (6-7 credit hours): ENGL 10600 or 10800 and COM 11400.

General Education Program Requirement (18 credit hours): Students must satisfy the requirements of the *General Education Program*.

Complementary Electives (4-6 credit hours):

Additional courses to bring the total to at least 125 credit hours. These courses should be selected to enhance the students academic program. These courses may include ECE courses beyond those required to complete the ECE Requirements or additional mathematics, science, engineering, and liberal arts courses. See *Guidelines for Complementary Electives* for more information about the types of courses that are acceptable as Complementary Electives.

Sample Plans-of-Study:

The Sample BSCmpE Plan-of-Study is meant to be used as a guideline for creating a personalized plan-of-study. A student's personal plan-of-study may differ in the arrangement of courses, number of semesters, and other details depending upon the student's specific needs and interests.

PURDUE

Electrical and Computer Engineering (https://engineering.purdue.edu/ECE)

ECE Course Descriptions

- ECE Undergrad Course Descriptions (coursesUndergrad)

- ECE Experimental Courses (coursesExperimental)

- BSEE Core Courses (coursesBSEECore)

- ECE Lab Courses (coursesLab)

- Special Content Courses (coursesSpecial)

- BSCmpE Core Courses (coursesBSCmpECore)

- BSCmpE Elective Courses (coursesBSCmpEElectives)

- ECE Graduate Courses (coursesGrad)

- ECE Graduate Experimental Courses (coursesExperimentalGrad)

- EPICS (Engineering Projects in Community Service) (http://epics.ecn.purdue.edu)

For the BSEE degree, up to 6 credit hours of VIP and EPICS can be used as EE Electives. ECE 37900 for 2 credits, ECE 47900 for 2 credits, EPCS 30200 and EPCS 40200 can be used as upper-level labs for 2 of the 3 required upper-level labs provided the student has completed 2 of the 3 ECE 20000 level lab courses ECE 20700, 20800, and 27000 and is concurrently enrolled in the third ECE 20000 level lab courses. EPICS and VIP credits beyond this can be used as Complementary Electives.

For the BSCmpE degree, up to 3 credit hours of VIP and EPICS can be used as CmpE Electives. VIP and EPICS credits beyond this can be used as Complementary Electives.

In addition to the above limitations, EPCS 41100 and 41200 can be used to satisfy the ECE Senior Design Requirement for both the BSEE and BSCmpE degrees.

Engineering Breadth Requirement

Both the BSEE and BSCmpE degrees require a 3 credit course in an engineering field other than electrical and computer engineering. The ECE Curriculum Committee has reviewed the course offerings in the various engineering schools and considers the following courses as appropriate for fulfilling this requirement.

AAE 20300	Aeromechanics I, 3 cr.
	Pre-requisite: PHYS 17200
	Concurrent Pre-requisite: MA 26100
CHE 20500	Chemical Engineering Calculations, 3 cr.
	Pre-requisites: ENGR 19500 Trans Ideas to Innov II, PHYS 17200, MA 16500 (or MA 16100)
	Concurrent Pre-requisite: CHM 11600 (or CHM 12400)
CE 29700	Basic Mechanics I (Statics), 3 cr.
	Pre-requisite: PHYS 17200
	Concurrent Pre-requisite: MA 26100
CE 35300	Physico-Chemical Principles of Environmental Eng., 3 cr.
	Pre-requisite: completion of freshman engineering requirements
CE 35500	Engineering Environmental Sustainability
	Pre-requisite: Sophomore Standing
EEE 35500	Engineering Environmental Sustainability
	Pre-requisite: Sophomore Standing
IE 33500	Operations Research - Optimization, 3 cr.
	Pre-requisite: MA 26500
	Concurrent Pre-requisite: IE 33200 (C programming skills and ECE 30200 will suffice)
IE 33600	Operations Research - Stochastic Models, 3 cr.
	Pre-requisites: MA 26500, IE 23000 (C programming skills and ECE 30200 will suffice)
	Concurrent Pre-requisite: MA 26600 (or MA 26200)
MSE 23000	Structure and Properties of Materials, 3 cr.
	Pre-requisites: MA 16500 (or MA 16100), CHM 11500
ME 20000	Thermodynamics, 3 cr.
	Pre-requisite: CHM 11500 (or CHM 12300)
	Concurrent Pre-requisite: MA 26100
ME 27000	Basic Mechanics I, 3 cr.
	Pre-requisite: PHYS 17200
	Concurrent Pre-requisite: MA 26100
ME 41300	Noise Control, 3 cr.
	Pre-requisites: MA 26600, PHYS 17200
NUCL 20000	Introduction to Nuclear Engineering I, 3 cr.
	Pre-requisites: PHYS 17200, MA 16600 (or MA 16200)