

College of Engineering

College of Engineering

Overview

Highly Ranked

U.S. News and World Report ranked both our graduate and undergraduate programs in the Top 10 nationwide. Purdue's College of Engineering is among the largest in the United States and includes 13 academic programs all with high rankings. And we're accelerating the speed at which we progress. Together, we're bringing our college from excellence to preeminence.

Aggressive Growth

Purdue's College of Engineering is embarking on a period of remarkable growth. With the support of the Provost and Board of Trustees, we expect to increase the size of the CoE faculty by as much as 30% and the CoE staff by 28% over the next five years. Growth on this scale is an opportunity for Transformational change. More information can be found on our Strategic Growth Initiative page.

Interdisciplinary, Global, and Diverse

Our growth, fueled by our alumni and friends, is giving us the tools and room to develop more revolutionary technologies that are already changing the world around us. We are **cutting across the established boundaries of Purdue's engineering and related disciplines**. In doing so, we're incorporating all perspectives. We're taking advantage of our own diverse makeup, and we're approaching issues from a world point of view. We're **equipping our students** with the capacity **to perform in a fast-changing and increasingly global economy**.

To find out more about Purdue Engineering, check out the rest of this Web site. You can also contact us, or please come for a visit to see what Purdue and you can do together.

Engineering Departments

First Year Engineering	Electrical and Computer Engineering
School of Aeronautics and Astronautics	Environmental & Ecological Engineering
Agricultural Engineering	Industrial Engineering
Biological Engineering	Interdisciplinary Engineering
Weldon School of Biomedical Engineering	Materials Engineering
Lyles School of Civil Engineering	Mechanical Engineering
School of Chemical Engineering	Multidisciplinary Engineering

Admissions (website)

First-Year Engineering at Purdue

The First-Year Engineering (FYE) Program of the School of Engineering Education is the entry point for all beginning engineering students. In the FYE program, students complete foundational coursework in math, science, engineering, and communications (oral and written). After this common first year, students choose their discipline of engineering and start to follow the plan of study of a particular degree program. The mission of this student-oriented program is to advise, prepare, and retain outstanding students for degree programs in Purdue's College of Engineering.

See First Year Engineering for more information.

Advising Information

Talk to an FYE Advisor

- make an appointment to meet with your FYE advisor
- learn about the walk-in schedule for FYE advisors or for Student Representatives of Professional Engineering Schools
- other common advisor questions

Contact Information

Office of the Dean of Engineering

Purdue University
Neil Armstrong Hall of Engineering, Suite 3000
701 West Stadium Ave.
West Lafayette, IN 47907-2045
E-mail: dean.of.engineering@purdue.edu
Phone: +1 (765) 494-5345
FAX: +1 (765) 494-9321

For additional faculty and staff contact information, consult our directory.

College of Engineering Administration

Systems Certificate information

Minor

Innovation and Transformational Change Minor

Choose your own path to obtain the Minor in Innovation and Transformational Change. Achieving the Minor requires 18 credits drawn from three categories of classes: Core Courses, Selectives, and Electives, with the latter two categories offering numerous opportunities to ensure you are linking your new knowledge and skills to problems you care about.

Requirements for the Minor (18 credits)

Required Courses (6 credits)

The CORE COURSES are required, and bookend the Minor experience providing an introduction to problem framing, solution space development, innovation, and design fundamentals at the onset of the program, and an in-depth experiential learning opportunity to apply your skills to a real grand challenge problem as you prepare to graduate.

- ENGR 30500 - Fundamentals Of Innovation Theory And Practice
- ENGR 49001 - Breakthrough Thinking For Complex Challenges

Selective Courses (9 credits)

SELECTIVES provide an opportunity for you to develop mindsets and capabilities that are critical to driving the innovative change necessary to address complex socio-technical challenges. You choose one course in each of three key areas to build your background:

Design Holistic Solutions (3 credits)

Employ systems thinking and rigorous innovation processes to DESIGN HOLISTIC SOLUTIONS.

- AAE 56000 - System-Of-Systems Modeling And Analysis
- EEE 25000 - Environmental, Ecological, and Engineering Systems
- IE 49000 - Special Topics In Industrial Engineering - Title: Imagine, Model, and Make
- ME 55300 - Product And Process Design
- TECH 53300 - Design Theory And Technology
- TLI 52000 - Foundations Of Innovation Studies
- CE 39800 - Introduction To Civil Engineering Systems Design
- EPCS (Any Level) -Engineering Projects in Community Service

Motivate Change (3 credits)

Help realize a shift in paradigm by MOTIVATING CHANGE.

- COM 44400 - Introduction To Communication And Social Entrepreneurship
- COM 21000 - Debating Public Issues
- COM 31800 - Principles Of Persuasion

- COM 30300 - Intercultural Communication
- CSR 33100 - Consumer Behavior
- ECON 47100 - Behavioral Economics
- MGMT 42710 - Digital Marketing Strategy
- MGMT 44362 - Leadership & Organizational Change
- OBHR 33000 - Introduction To Organizational Behavior
- PHIL 22100 - Introduction To Philosophy Of Science
- PSY 27200 - Introduction To Industrial-Organizational Psychology
- TLI 25400 - Leading Change In Technology Organizations
- TLI 31400 - Leading Innovation In Organizations
- TLI 35600 - Global Technology Leadership

Develop Strategies for Financial Sustainability (3 credits)

Ensure your ideas are viable by DEVELOPING STRATEGIES FOR FINANCIAL SUSTAINABILITY.

- ENTR 20000 - Introduction To Entrepreneurship And Innovation
- ENTR 31000 - Marketing And Management For New Ventures
- IET 45100 - Monetary Analysis For Industrial Decisions
- MGMT 30400 - Introduction To Financial Management
- MGMT 35200 - Strategic Management
- MGMT 42310 - Global Marketing Management
- MGMT 48400 - Management Of Entrepreneurial Ventures
- POL 23500 - International Relations Among Rich And Poor Nations
- SOC 31600 - Industry And Society
- SOC 33900 - Introduction To The Sociology Of Developing Nations

Electives Courses: (3 credits)

ELECTIVES enable you to further contextualize your minor by gaining depth in an area that will enhance your potential to drive innovation and transformational change in industry, academia, or the non-profit sector. Accumulate 3 credits from any of the following areas:

Research Methods

Learn versatile RESEARCH METHODS to gain insight into human behavior

- AGECE 45100 - Applied Econometrics
- ANTH 38000 - Using Anthropology In The World
- ANTH 38500 - Community Engagement In Anthropology
- ANTH 41800 - Field Methods In Cultural Anthropology
- ANTH 59200 - Selected Topics In Anthropology - Evidence, Power, Politics: Working in Expert & Technical Cultures
- COM 32500 - Interviewing: Principles And Practice
- ECON 36000 - Econometrics
- MGMT 42110 - Marketing Analytics
- SOC 38300 - Introduction To Research Methods In Sociology

Grand Challenges

Gain a deeper understanding of the cultural and social aspects of GRAND CHALLENGES such as: Education, Energy, the Environment, Food, and Health

General

- AGEC 40600 - Natural Resource And Environmental Economics
- AGEC 34000 - International Economic Development
- AGEC 20400 - Introduction To Resource Economics And Environmental Policy
- ANTH 57500 - Economic Anthropology
- ANTH 32700 - Environment And Culture
- ANTH 20400 - Introduction To Biological Anthropology And Human Evolution
- ANTH 20500 - Human Cultural Diversity
- ANTH 21000 - Technology And Culture
- ENE 55300 - Introduction To Globalization And Engineering
- ENGR 31000 - Engineering In Global Context
- HIST 33300 - Science And Society In Western Civilization I
- HIST 33400 - Science And Society In Western Civilization II
- ME 49200 - Technology And Values
- PHAD 55600 - Healthcare Economics And Public Policy
- SOC 57200 - Comparative Healthcare Systems

Education

- EDCI 56500 - Principles Of Adult Education
- EDST 51200 - Foundations Of Educational Policy
- EDST 51400 - Economics Of Education
- EDPS 30102 - Social-Emotional Aspects Of Learning In Diverse Environments

Environment

- AGEC 52500 - Environmental Policy Analysis
- BCM 41900 - Sustainable Construction
- BCM 51000 - Topics In Environmentally Sustainable Construction, Design And Development
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- CE 35500 - Engineering Environmental Sustainability
- EAPS 36000 - Great Issues In Science And Society
- EAPS 32700 - Climate, Science And Society
- EEE 35500 - Engineering Environmental Sustainability
- FNR 30200 - Global Sustainability Issues
- FNR 48800 - Global Environmental Issues
- HIST 39400 - Environmental History Of The United States
- HTM 37000 - Sustainable Tourism And Responsible Travel
- PHIL 29000 - Environmental Ethics
- POL 22300 - Introduction To Environmental Policy
- POL 32300 - Comparative Environmental Policy

- POL 32700 - Global Green Politics
- POL 42300 - International Environmental Policy

Energy

- EAPS 30100 - Oil !
- EAPS 37500 - Great Issues - Fossil Fuels, Energy And Society
- ME 44000 - Automotive Prime Movers: Green Engines And Clean Fuel

Food

- AGECE 25000 - Economic Geography Of World Food And Resources
- AGECE 41000 - Agricultural Policy
- AGECE 52800 - Global Change And The Challenge Of Sustainably Feeding A Growing Planet

Health

- ANTH 34000 - Global Perspectives On Health
- BIOL 31200 - Great Issues Genomics And Society
- HK 36500 - Principles Of Community Health Promotion
- HK 58100 - International Health

Notes:

- Achieve a GPA of at least 2.0 across the courses pursued for the minor

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.

First Year Engineering

Pre-Program

First Year Engineering

About the Program

The First-Year Engineering (FYE) Program of the School of Engineering Education is the entry point for all beginning engineering students. In the FYE program, students complete foundational coursework in math, science, engineering, and communications (oral and written). After this common first year, students choose their discipline of engineering and start to follow the plan of study of a particular degree program. The mission of this student-oriented program is to advise, prepare, and retain outstanding students for degree programs in Purdue's College of Engineering.

Talk to an FYE Advisor

- make an appointment to meet with your FYE advisor
- learn about the walk-in schedule for FYE advisors or for Student Representatives of Professional Engineering Schools
- other common advisor questions

30+ Credits Required

C- or better for any course used

Requirements for First-Year Engineering (FYE)

To complete FYE and be eligible for consideration for entry into an Engineering degree program, a student must comply with the grade average requirement and complete the following required courses:

Requirement #1: Intro to Engineering I (2-4 credits)

One of the following course options:

- ENGR 13100 - Transforming Ideas To Innovation I or
- ENGR 14100 - Honors Creativity And Innovation In Engineering Design I or
- ENGR 16100 - Honors Introduction To Innovation And The Physical Science Of Engineering Design I or

- EPCS 11100 - First Year Participation In EPICS I and
- EPCS 12100 - First Year Participation In EPICS II

Requirement #2: Intro to Engineering II (2-4 credits)

One of the following course options:

- ENGR 13200 - Transforming Ideas To Innovation II or
- ENGR 13300 - Transforming Ideas To Innovation, EPICS or
- ENGR 14200 - Honors Creativity And Innovation In Engineering Design II or
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II

Requirement #3: Calculus I (4-5 credits)

(Satisfies Quantitative Reasoning for core)

One of the following course options:

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

Requirement #4: Calculus II (4-5 credits)

One of the following course options:

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Requirement #5: Chemistry I (4-6 credits)

One of the following course options:

- CHM 11500 - General Chemistry or
- CHM 11100 - General Chemistry
and
- CHM 11200 - General Chemistry

Requirement #6: Physics (4 credits)

One of the following course options:

- PHYS 17200 - Modern Mechanics or
- ENGR 16100 - Honors Introduction To Innovation And The Physical Science Of Engineering Design I and
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II

Requirement #7: Science Selective (3-4 credits)

One of the following course options:

- CHM 11600 - General Chemistry or
- CS 15900 - Programming Applications For Engineers or
- BIOL 11000 - Fundamentals Of Biology I or
- BIOL 11100 - Fundamentals Of Biology II or
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms or
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior and
- BIOL 13500 - First year Biology Laboratory

Requirement #8: Other requirements (6 credits)

Two of the following course options:

- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10600 - First-Year Composition or
- ENGL 10800 - Accelerated First-Year Composition or
- ENGL 11000 - American Language And Culture For International Students I or
- ENGL 11100 - American Language And Culture For International Students II or
- CLCS 23100 - Survey Of Latin Literature or
- CLCS 23700 - Gender And Sexuality In Greek And Roman Antiquity or
- CLCS 33900 - Literature And The Law or
- COM 20400 - Critical Perspectives On Communication or

- EDCI 20500 - Exploring Teaching As A Career or
- HONR 19903 - Interdisciplinary Approaches In Writing or
- PHIL 26000 - Philosophy And Law

Grade Average requirement

To complete FYE, the student's cumulative GPA must be of 2.00 or greater, and an Engineering Admissions Index (EAI) must be 2.00 or greater. Calculation of the EAI is equivalent to the calculation of GPA for courses used to meet all FYE requirements above. If a student meets a requirement in more than one way, only one will be used to calculate the EAI. The FYE Curriculum Committee will be responsible for keeping an updated, clear, and universal set of rules for determining which course is used in EAI for these situations. These rules are available to students in the FYE Advising office.

Typical plan of study

The requirements of the FYE program are designed to be completed in two semesters (typically fall and spring) of full-time on-campus study. Individual plans of study may vary depending on student interest and ability, and on previously earned credit (through AP, dual-credit high school courses, etc.). A standard plan of study is listed below. All courses in the typical plan of study are offered in all terms (fall, spring, and summer).

Semester 1

- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I or
- ENGR 13300 - Transforming Ideas To Innovation, EPICS
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

Semester 2

- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II or
- EPCS 11100 - First Year Participation In EPICS I and
- EPCS 12100 - First Year Participation In EPICS II
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or

- COM 11400 - Fundamentals Of Speech Communication

Science Selective - 3.00 Credits

Transitioning to a degree program

After completion of the FYE program, students may transition to one of fifteen degree programs in engineering (i.e., Mechanical, Electrical, Chemical, Civil, etc.); this happens through the "Transition to Major" (or T2M) process. As a student nears completion of FYE, he or she will inform FYE of their preferred choices of degree program (major). If the degree program is not at capacity, all students completing FYE requirements and requesting that degree program will be admitted. If the program is at capacity, admission will be based on academic record, including GPA, EAI, and grades in specific courses.

Disclaimer

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

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School of Aeronautics and Astronautics

Aeronautical and Astronautical Engineering

The Aeronautics and Astronautics curriculum emphasizes the disciplines of aerodynamics, aerospace systems, astrodynamics and space applications, propulsion, structures and materials, dynamics and control, and further provides courses that integrate these disciplines into the design of flight vehicles to perform the required mission.

The field of aeronautical and astronautical engineering addresses the challenging problems encountered in the design and operation of many types of aircraft, missiles, and space vehicles and places a constant demand on research and development groups for an even greater understanding of basic physical phenomena.

Employers from around the world contact the School of Aeronautics and Astronautics with information regarding positions available within their organizations.

Mission Statement

To serve the State of Indiana and our Nation by providing degree granting programs - recognized as innovative learning experiences - that prepare students to be exceptional, recognized contributors to aeronautical and astronautical engineering in industry, government laboratories and universities.

To develop and maintain quality graduate research programs in technical areas relevant to Aeronautics and Astronautics and to foster a collegial and challenging intellectual environment necessary to conduct enabling and breakthrough research for aerospace systems.

Faculty (website)

Contact Information

School of Aeronautics and Astronautics

Neil Armstrong Hall of Engineering

701 West Stadium Avenue

West Lafayette, IN 47907-2041

Phone: (765)494-5157

Fax: (765)494-0307

Graduate Information

For Graduate Information please see Aeronautics and Astronautics Graduate Program Information.

Baccalaureate

Aeronautics and Astronautics Engineering, BSAAE

About the Program

The Aeronautics and Astronautics Engineering program is accredited by the Engineering Accreditation Commission of ABET.

The field of aeronautical and astronautical engineering includes the challenging problems encountered in the design and operation of many types of aircraft, missiles, and space vehicles and puts a constant demand on research and development groups for an even better understanding of basic physical phenomena.

Aeronautical education has existed on at least a small scale at Purdue University since about 1920. Aeronautical Engineering degrees were first offered at Purdue by the School of Mechanical & Aeronautical Engineering during WWII, and the first B.S. Degrees were awarded in 1943. The School of Aeronautics was established as a separate entity on July 1, 1945. (For a complete history visit the School's history page.)

During the first sixty years of its existence, the School of Aeronautics and Astronautics has awarded 5,824 BS degrees, 1,439 MS degrees and 474 PhD degrees. These graduates have made significant contributions to the aerospace field, and have held positions of high responsibility in government and private industry. Twenty-three graduates of Purdue have become astronauts, and of these, fourteen have been graduates of the School of Aeronautics and Astronautics.

The Aeronautical and Astronautical Engineering curriculum concentrates on the fundamental subject areas necessary to the research, development, design, and operation of the aerospace industry. The curriculum is designed to emphasize the disciplines of aerodynamics, propulsion, structures, dynamics, and control, and further provides design courses to integrate these disciplines into the design of flight vehicles that will perform the required mission. A strong background in mathematics and physics is required to pursue these disciplines, and extensive use of computers and programming skills is a necessity.

The future holds many interesting challenges. The record shows that our graduates have demonstrated their ability to provide technical leadership in a variety of successfully completed projects. A degree from Purdue University in the School of Aeronautics and Astronautics promises to prepare our future graduates for the 21st century in the aerospace field.

Degree Requirements

130 Credits Required

Departmental/Program Major Courses (62 credits)

AAE Engineering Major Courses (41 credits)

- AAE 20000 - Undergraduate Sophomore Seminar
- AAE 20300 - Aeromechanics I
- AAE 25100 - Introduction To Aerospace Design
- AAE 20400 - Aeromechanics II
- AAE 20401 - Aeromechanics II Laboratory
- AAE 30000 - Undergraduate Junior Seminar
- AAE 30100 - Signal Analysis For Aerospace Engineering
- AAE 33300 - Fluid Mechanics
- AAE 33301 - Fluid Mechanics Laboratory
- AAE 33400 - Aerodynamics
- AAE 34000 - Dynamics And Vibrations
- AAE 35200 - Structural Analysis I
- AAE 36400 - Control System Analysis
- AAE 36401 - Control Systems Laboratory
- AAE 40000 - Undergraduate Senior Seminar

- AAE 33401 - Aerodynamics Laboratory or
- AAE 35201 - Structural Analysis I Laboratory

- AAE 33800 - Thermal Sciences or
- AAE 33900 - Aerospace Propulsion

- AAE 42100 - Flight Dynamics And Control or
- AAE 44000 - Spacecraft Attitude Dynamics

- AAE 45000 - Spacecraft Design or
- AAE 45100 - Aircraft Design

AAE Technical Electives, AAE Specialization, and AAE Selectives (21 credits)

Aeronautics and Astronautics Engr Specialization, Selective, Technical Elective

AAE Technical Electives (6 credits)

AAE Engr Specialization (9 credits)

AAE Selectives (6 credits)

Other Departmental /Program Course Requirements (50 credits)

- CGT 16300 - Graphical Communication And Spatial Analysis
- CHM 11500 - General Chemistry (satisfies Science Selective for core & satisfies FYE requirement)
- CS 15900 - Programming Applications For Engineers (Satisfies FYE requirement)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies Information Literacy for core & satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II (Satisfies FYE requirement)
- MA 26100 - Multivariate Calculus (satisfies Math and Physics requirement)
- MA 26500 - Linear Algebra (satisfies Quantitative Reasoning for core & satisfies Math and Physics requirement)
- MA 26600 - Ordinary Differential Equations (satisfies Math and Physics requirement)
- MA 30400 - Differential Equations And Analysis Of Nonlinear Systems For Engineering And The Sciences
- ME 20000 - Thermodynamics I
- PHYS 17200 - Modern Mechanics (satisfies Science Selective for core & satisfies FYE requirement)

- COM 11400 - Fundamentals Of Speech Communication (satisfies Oral Communication for core - strongly recommended) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or

- ENGL 10600 - First-Year Composition (satisfies Written Communication for core & satisfies FYE requirement) or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity (Satisfies FYE requirement) or
- ENGL 10800 - Accelerated First-Year Composition (satisfies Written Communication for core & satisfies FYE requirement)

- MA 16500 - Analytic Geometry And Calculus I (Satisfies FYE requirement) or
- MA 16100 - Plane Analytic Geometry And Calculus I (Satisfies FYE requirement)

- MA 16600 - Analytic Geometry And Calculus II (Satisfies FYE requirement) or
- MA 16200 - Plane Analytic Geometry And Calculus II (Satisfies FYE requirement)

- PHYS 24100 - Electricity And Optics (satisfies Math and Physics requirement) or
- PHYS 27200 - Electric And Magnetic Interactions (satisfies Math and Physics requirement)

Note

COM 11400 is a highly recommended general elective and is counted separately from the 18 credits of Gen Ed requirement. Therefore the Gen Ed requirement is $18 + 3 \text{ credits} = 21$ when including COM 11400. AAE also requires students to complete a business elective and a communications/writing elective at the 300-level or higher.

General Education Electives (18 credits)

- G.E.-I - Credit Hours: 3.00 (satisfies Behavioral/Social Science for Core)
- G.E.-II - Credit Hours: 3.00 (satisfies Humanities for Core)
- G.E.-III - Credit Hours: 3.00 (Satisfies Science, Technology and Society for Core)
- G.E.-IV - Credit Hours: 3.00
- G.E.-V - Credit Hours: 3.00
- G.E.-VI - Credit Hours: 3.00

[Click here for Aeronautics and Astronautics Engr General Educ Requirements Course 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](#).

Program Requirements

Fall 1st Year

- CGT 16300 - Graphical Communication And Spatial Analysis **
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16500 - Analytic Geometry And Calculus I ♦

- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition

15 Credits

Spring 1st Year

- CS 15900 - Programming Applications For Engineers **
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II
- MA 16600 - Analytic Geometry And Calculus II

- PHYS 17200 - Modern Mechanics or
- ENGR 13200 - Transforming Ideas To Innovation II ♦
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

16 Credits

Fall 2nd Year

- AAE 20300 - Aeromechanics I ♦ ++
- AAE 25100 - Introduction To Aerospace Design
- MA 26100 - Multivariate Calculus ♦
- MA 26500 - Linear Algebra ♦
- AAE 20000 - Undergraduate Sophomore Seminar ♦
- Gen Elective I - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- AAE 20400 - Aeromechanics II ♦ ++
- AAE 20401 - Aeromechanics II Laboratory ♦
- MA 26600 - Ordinary Differential Equations ♦
- ME 20000 - Thermodynamics I ♦
- PHYS 24100 - Electricity And Optics ** **
- Gen Elective II - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- AAE 33300 - Fluid Mechanics
- AAE 33301 - Fluid Mechanics Laboratory
- AAE 35200 - Structural Analysis I
- MA 30400 - Differential Equations And Analysis Of Nonlinear Systems For Engineering And The Sciences
- AAE 30100 - Signal Analysis For Aerospace Engineering
- AAE 30000 - Undergraduate Junior Seminar
- Gen Elective III - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- AAE 33400 - Aerodynamics
- AAE 34000 - Dynamics And Vibrations
- AAE 36400 - Control System Analysis

- AAE 33401 - Aerodynamics Laboratory or
- AAE 35201 - Structural Analysis I Laboratory

- AAE 33800 - Thermal Sciences or

- AAE 33900 - Aerospace Propulsion
- Gen Elective IV - Credit Hours: 3.00

16 Credits

Fall 4th Year

- AAE 36401 - Control Systems Laboratory
- AAE 40000 - Undergraduate Senior Seminar
- AAE 42100 - Flight Dynamics And Control or Technical Elective
- Specialization/Selectives - Credit Hours: 6.00
- Gen Elective V - Credit Hours: 3.00
- Tech Elective - Credit Hours: 3.00

17 Credits

Spring 4th Year

- AAE 44000 - Spacecraft Attitude Dynamics or Tech Elective - Credit Hours: 3.00
- AAE 45000 - Spacecraft Design or
- AAE 45100 - Aircraft Design
- Specialization/Selectives - Credit Hours: 9.00
- Gen Elective VI - Credit Hours: 3.00

18 Credits

Notes

*Satisfies a University Core Requirement

**Satisfies a Non-departmental Major Course Requirement

++Students must earn a "C-" or better

2.0 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.

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Department of Agricultural and Biological Engineering

All information is available at the main department:

Department of Agricultural and Biological Engineering

Weldon School of Biomedical Engineering

Biomedical Engineering

Students in Biomedical Engineering learn to apply tools from engineering and life sciences to design solutions for challenges in human biology, medicine, and healthcare delivery.

Biomedical Engineering students complete coursework in math, physics, chemistry and the life science in combination with engineering principles and design courses to understand the physical and chemical properties of human tissues, computational modeling and analyses, molecular transport, biomechanics, human physiology, and biomedical systems and instrumentation. Essential experiential and practical training includes small group problem-based learning, study abroad programs, internships with a broad range of medically related companies, research in faculty labs, and engineering design projects to solve real medical needs.

The home for the **Weldon School of Biomedical Engineering** is a state-of-the-art building specifically designed to enhance both teaching and research. The \$25-million, 91,000-square-foot facility accommodates the continued growth of biomedical engineering in the 21st century.

Programs of focus and faculty expertise include imaging, instrumentation, engineered biomaterials and biomechanics, and quantitative cellular and systems engineering.

Faculty

<https://engineering.purdue.edu/BME/People>

Contact Information

Weldon School of Biomedical Engineering
Purdue University
206 S. Martin Jischke Drive
West Lafayette, IN 47907-2032
Phone: (765) 494-2995
Email: WeldonBME@purdue.edu
Weldon BME Undergraduate Program
BME Undergraduate Webpage

WeldonBMEUndergrad@purdue.edu

Graduate Information

For Graduate Information please see [Biomedical Engineering Graduate Program Information](#).

Baccalaureate

Biomedical Engineering, BSBME

About the Program

The Biomedical Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Students in Biomedical Engineering learn to apply tools from engineering and life sciences to design solutions for challenges in human biology, medicine, and healthcare delivery.

Biomedical Engineering students complete coursework in math, physics, chemistry and the life science in combination with engineering principles and design courses to understand the physical and chemical properties of human tissues, computational modeling and analyses, molecular transport, biomechanics, human physiology, and biomedical systems and instrumentation. Essential experiential and practical training includes small group problem-based learning, study abroad programs, internships with a broad range of medically related companies, research in faculty labs, and engineering design projects to solve real medical needs.

The home for the **Weldon School of Biomedical Engineering** is a state-of-the-art building specifically designed to enhance both teaching and research. The \$25-million, 91,000-square-foot facility accommodates the continued growth of biomedical engineering in the 21st century.

Programs of focus and faculty expertise include imaging, instrumentation, engineered biomaterials and biomechanics, and quantitative cellular and systems engineering.

Degree Requirements

130 Credits Required

Biomedical Engineering Major Requirements (38 credits)

For more information, please refer to the [Purdue BME website](#).

BME Courses (29 credits)

- BME 20100 - Biomolecules: Structure, Function, And Engineering Applications
- BME 20500 - Biomolecular And Cellular Systems Laboratory
- BME 29000 - Frontiers In Biomedical Engineering
- BME 20400 - Biomechanics Of Hard And Soft Tissues
- BME 20600 - Biomechanics And Biomaterials Laboratory
- BME 25600 - Physiological Modeling In Human Health
- BME 30100 - Bioelectricity
- BME 30400 - Biomedical Transport Fundamentals
- BME 30500 - Bioinstrumentation Circuit And Measurement Principles
- BME 30600 - Biotransport Laboratory
- BME 39000 - Professional Development And Design In Biomedical Engineering
- BME 48901 - Senior Design Project
- BME 49000 - Professional Elements Of Design

Core Engineering Courses (9 credits)

- ME 27000 - Basic Mechanics I
- ABE 20200 - Thermodynamics In Biological Systems II
- ECE 30100 - Signals And Systems

Technical Engineering Electives and Life Science Selectives (21 credits)

- Biomedical Engineering Supplemental Electives - Technical (Including Quantitative Breadth and Data Science Focus requirements) - Credit Hours: 15.00
- Biomedical Engineering Supplemental Selectives - Life Science - Credit Hours: 6.00

Other Program Class Requirements (68 credits)

- BIOL 23000 - Biology Of The Living Cell (Satisfies Life Science Core requirement)
- CHM 11500 - General Chemistry (Satisfies FYE requirement; Science Selective for core)
- CS 15900 - Programming Applications For Engineers (Satisfies FYE Science Requirement)
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16500 - Analytic Geometry And Calculus I (Satisfies FYE requirement) or
- MA 26100 - Multivariate Calculus (Satisfies Math and Physics requirement)
- MA 26200 - Linear Algebra And Differential Equations (Satisfies Math and Physics requirement)
- PHYS 17200 - Modern Mechanics (Satisfies FYE requirement; Science Selective for core)
- PHYS 24100 - Electricity And Optics (Satisfies Math and Physics requirement)

- MA 16600 - Analytic Geometry And Calculus II (Satisfies FYE requirement) or
- MA 16200 - Plane Analytic Geometry And Calculus II (Satisfies FYE requirement) or
- MA 17300 - Calculus And Analytic Geometry II

- STAT 35000 - Introduction To Statistics (Satisfies Biomedical Engineering Required Course requirement)* or

- STAT 51100 - Statistical Methods (Satisfies Biomedical Engineering Required Course requirement)* or
- CHE 32000 - Statistical Modeling And Quality Enhancement (Satisfies Biomedical Engineering Required Course requirement)* or
- IE 33000 - Probability And Statistics In Engineering II (Satisfies Biomedical Engineering Required Course requirement)* or
- STAT 41600 - Probability (Satisfies Biomedical Engineering Required Course requirement)* and
- STAT 41700 - Statistical Theory

- CHM 11600 - General Chemistry (Satisfies FYE requirement; Science Selective for core) or
- CHM 13600 - General Chemistry Honors

- ENGR 13100 - Transforming Ideas To Innovation I (Satisfies FYE requirement) or
- ENGR 14100 - Honors Creativity And Innovation In Engineering Design I or
- ENGR 16100 - Honors Introduction To Innovation And The Physical Science Of Engineering Design I

- ENGR 13200 - Transforming Ideas To Innovation II (Satisfies FYE requirement) or
- ENGR 14200 - Honors Creativity And Innovation In Engineering Design II or
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II

- ENGL 10600 - First-Year Composition (Satisfies FYE requirement; Written Communication/ Informational Literacy for core) or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition

- COM 11400 - Fundamentals Of Speech Communication (Satisfies FYE requirement; Oral Communication for core) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or
- EDPS 31500 - Collaborative Leadership: Interpersonal Skills

Biomedical Engineering Supplemental Selectives - General Education (18 credits)

- Ethics/Healthcare Policy Selective - Credit Hours: 3.00
- General Education Selective-II - Credit Hours: 3.00
- General Education Selective-III - Credit Hours: 3.00
- General Education Selective-IV - Credit Hours: 3.00
- General Education Selective-V - Credit Hours: 3.00
- General Education Selective-VI - Credit Hours: 3.00

Electives (3 credits)

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.

Program Requirements

Suggested plan of study:

Fall 1st Year

- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition

13-14 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- CHM 11600 - General Chemistry
- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or
- EDPS 31500 - Collaborative Leadership: Interpersonal Skills

17 Credits

Fall 2nd Year

- BIOL 23000 - Biology Of The Living Cell
- BME 20100 - Biomolecules: Structure, Function, And Engineering Applications
- BME 20500 - Biomolecular And Cellular Systems Laboratory
- BME 29000 - Frontiers In Biomedical Engineering

- MA 26100 - Multivariate Calculus
- ME 27000 - Basic Mechanics I
- CS 15900 - Programming Applications For Engineers

18 Credits

Spring 2nd Year

- ABE 20200 - Thermodynamics In Biological Systems II
- BME 20400 - Biomechanics Of Hard And Soft Tissues
- BME 20600 - Biomechanics And Biomaterials Laboratory
- BME 25600 - Physiological Modeling In Human Health
- MA 26200 - Linear Algebra And Differential Equations
- PHYS 24100 - Electricity And Optics

17 Credits

Fall 3rd Year

- BME 30100 - Bioelectricity
- BME 30500 - Bioinstrumentation Circuit And Measurement Principles
- BME 30400 - Biomedical Transport Fundamentals
- STAT 35000 - Introduction To Statistics or
- STAT 51100 - Statistical Methods (preferred for BME)
- General Education or Ethics Selective - Credit Hours: 3.00

15 Credits

Spring 3rd Year

- BME 30600 - Biotransport Laboratory
- BME 39000 - Professional Development And Design In Biomedical Engineering
- ECE 30100 - Signals And Systems
- Technical Engineering Elective - Credit Hours: 3.00
- Technical Engineering Elective (Quantitative Breadth/Data Science) - Credit Hours: 3.00
- General Elective or Ethics & Policy Selective - Credit Hours: 3.00

16 Credits

Fall 4th Year

- BME 48901 - Senior Design Project
- BME 49000 - Professional Elements Of Design
- Technical Engineering Elective - Credit Hours: 3.00

- Life Science Selective - Credit Hours: 3.00
- General Education Selective - Credit Hours: 3.00
- General Education Selective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- Technical Engineering Elective (Quantitative Breadth/Data Science) - Credit Hours: 3.00
- Technical Engineering Elective - Credit Hours: 3.00
- Life Science Selective - Credit Hours: 3.00
- General Education Selective - Credit Hours: 3.00
- General Education Selective - Credit Hours: 3.00
- Unrestricted Elective - Credit Hours: 3.00

18 Credits

Notes

All required First Year Engineering (FYE) courses must be completed with a C- or above for entry into BME.

A minimum Graduation Index and BME Major GPA of at least 2.0 is required to qualify for graduation with a BSBME.

Courses used to calculate BME Major GPA include: BME 20100, BME 20400, BME 20500, BME 20600, BME 25600, BME 29000, BME 30100, BME 30400, BME 30500, BME 30600, BME 39000, BME 48901, BME 49000, ABE 20200, ME 27000, ECE 30100, and STAT 35000 (or equivalent).

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.

School of Chemical Engineering

Chemical Engineering Overview

Chemical Engineering remains a premier source of well-educated, well-prepared chemical engineers, educating students using innovative technologies and fostering an environment that inspires leading-edge research.

Chemical engineers work in a wide range of industries with worldwide impact. Applications include energy; pharmaceuticals and biological materials; the nutritional value of food; environmental protection and restoration; materials for computing, sensing, and communications; personal care, home care, and home health products; and system and data management.

Chemical engineers rely on their knowledge of mathematics and science - particularly chemistry - to overcome technical problems in industry and society. While the chemist studies basic chemical reactions, the chemical engineer applies the results of chemical research and transforms laboratory processes into efficient, full-scale processes or facilities. With their strong problem-solving skills and fundamental background in mathematics, physics, chemistry and biology, chemical engineers can seize opportunities to translate industrial problems into competitive advantages. Currently, chemical engineers demand among the highest salaries for college graduates with a bachelor's degree.

Research here is currently being conducted with polymers and materials, nanoscale science and engineering, fluid mechanics, catalyst design and engineering, sensors, biotechnology, and many others.

Faculty

<https://engineering.purdue.edu/ChE/People/ptFaculty>

Contact Information

Chemical Engineering Undergraduate Office

Forney Hall of Chemical Engineering, Room G041
(765) 494-5650 Phone
(765) 494-0307 FAX

Dr. David Corti

Director of Undergraduate Studies, Professor of Chemical Engineering

Karissa Raderstorf

Associate Director of Undergraduate Studies

kraderstorf@purdue.edu

Caryn Morgan

Senior Academic Advisor

carynmorgan@purdue.edu

Sandy Hendryx

Undergraduate Office Secretary

hendryxs@purdue.edu

Graduate Information

For Graduate Information please see Chemical Engineering Graduate Program Information.

Baccalaureate

Chemical Engineering, BSCHE

About the Program

The Chemical Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Chemical Engineering remains a premier source of well-educated, well-prepared chemical engineers, educating students using innovative technologies and fostering an environment that inspires leading-edge research.

Chemical engineers work in a wide range of industries with worldwide impact. Applications include energy; pharmaceuticals and biological materials; the nutritional value of food; environmental protection and restoration; materials for computing, sensing, and communications; personal care, home care, and home health products; and system and data management.

Chemical engineers rely on their knowledge of mathematics and science - particularly chemistry - to overcome technical problems in industry and society. While the chemist studies basic chemical reactions, the chemical engineer applies the results of chemical research and transforms laboratory processes into efficient, full-scale processes or facilities. With their strong problem-solving skills and fundamental background in mathematics, physics, chemistry and biology, chemical engineers can seize opportunities to translate industrial problems into competitive advantages. Currently, chemical engineers demand among the highest salaries for college graduates with a bachelor's degree.

Research here is currently being conducted with polymers and materials, nanoscale science and engineering, fluid mechanics, catalyst design and engineering, sensors, biotechnology, and many others.

Degree Requirements

130 Credits Required

Major Required Courses (41 credits)

- CHE 20000 - Chemical Engineering Seminar

Chemical Engineering Core

- CHE 20500 - Chemical Engineering Calculations
- CHE 21100 - Introductory Chemical Engineering Thermodynamics
- CHE 30000 - Chemical Engineering Seminar
- CHE 30600 - Design Of Staged Separation Processes
- CHE 32000 - Statistical Modeling And Quality Enhancement
- CHE 34800 - Chemical Reaction Engineering

- CHE 37700 - Momentum Transfer
- CHE 37800 - Heat And Mass Transfer
- CHE 40000 - Chemical Engineering Seminar
- CHE 42000 - Process Safety Management And Analysis
- CHE 43500 - Chemical Engineering Laboratory
- CHE 45000 - Design And Analysis Of Processing Systems
- CHE 45600 - Process Dynamics And Control

Other Departmental Courses (89 credits)

Select one course from the Written Communication list.

Click below for the UCC approved course list.

Written Com

- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World (satisfies Oral Communication for core) or
- COM 11400 - Fundamentals Of Speech Communication (satisfies Oral Communication for core) or
- COM 21700 - Science Writing And Presentation (satisfies Oral Communication for core) or
- EDPS 31500 - Collaborative Leadership: Interpersonal Skills (satisfies Oral Communication for core)
- ENGR 13100 - Transforming Ideas To Innovation I ChE Foundational Engineering Requirements (satisfies Information Literacy for core)
- ENGR 13200 - Transforming Ideas To Innovation II ChE Mathematics Requirements
- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core)
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus
- Math Selective I Chemical Engineering Supplemental Selectives (select from list) - Credit Hours: 3.00 - 4.00
- Math Selective II Chemical Engineering Supplemental Selectives (select from list) - Credit Hours: 3.00 - 4.00

ChE Science Requirements

- CHM 11500 - General Chemistry (satisfies Science Selective for core)
- CHM 11600 - General Chemistry (satisfies Science Selective for core)
- CHM 26100 - Organic Chemistry
- CHM 26300 - Organic Chemistry Laboratory
- CHM 26200 - Organic Chemistry
- CHM 26400 - Organic Chemistry Laboratory
- CHM 37000 - Topics In Physical Chemistry
- PHYS 17200 - Modern Mechanics or
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II
- Biology Selective Chemical Engineering Supplemental Selectives (select from List) - Credit Hours: 3.00
- Chemical Engineering Supplemental Selectives (select from List) - Credit Hours: 3.00
- Engineering Selective Chemical Engineering Supplemental Selectives (select from list) - Credit Hours: 3.00
- Engineering Selective Chemical Engineering Supplemental Selectives (select from list) - Credit Hours: 3.00
- PHYS 24100 - Electricity And Optics

- Technical Selective Chemical Engineering Supplemental Selectives (select from list) - Credit Hours: 3.00

Chemical Engineering Supplemental General Educ Requirements

- General Education Elective I (satisfies Human Cultures: Behavioral Social Science for core) - Select from Supplemental List - Credit Hours: 3.00
- General Education Elective II (satisfies Science, Technology, & Society for core) - Select from Supplemental List - Credit Hours: 3.00
- General Education Elective III (satisfies Human Cultures: Humanities for core) - Select from Supplemental List - Credit Hours: 3.00
- General Education Elective IV - Select from Supplemental List - Credit Hours: 3.00
- General Education Elective V - Upper Level - Select from Supplemental List - Credit Hours: 3.00
- General Education Elective VI - Upper Level - Select from Supplemental List - Credit Hours: 3.00

Optional Concentrations

- Biological Engineering Concentration in Chemical Engineering (Optional)
- Energy and Environment Concentration in Chemical Engineering (Optional)
- Materials and Polymers Concentration in Chemical Engineering (Optional)
- Pharmaceutical Engineering Concentration in Chemical Engineering (Optional)

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](#).

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16500 - Analytic Geometry And Calculus I
Written Communication Selective - Credit Hours: 3.00

13 Credits

Spring 1st Year

- CHM 11600 - General Chemistry
- ENGR 13200 - Transforming Ideas To Innovation II
- MA 16600 - Analytic Geometry And Calculus II

- PHYS 17200 - Modern Mechanics or
- ENGR 16200 - Honors Introduction To Innovation And The Physical Science Of Engineering Design II

- Oral Communication Selective - Credit Hours: 3.00

17 Credits

Fall 2nd Year

- CHE 20000 - Chemical Engineering Seminar ♦
- CHE 20500 - Chemical Engineering Calculations ♦
- CHM 26100 - Organic Chemistry
- CHM 26300 - Organic Chemistry Laboratory
- MA 26100 - Multivariate Calculus
- PHYS 24100 - Electricity And Optics

15 Credits

Spring 2nd Year

- CHE 21100 - Introductory Chemical Engineering Thermodynamics ♦
- CHE 32000 - Statistical Modeling And Quality Enhancement ♦
- CHM 26200 - Organic Chemistry
- CHM 26400 - Organic Chemistry Laboratory
- Math Selective I - Credit Hours: 3.00 - 4.00
- General Education Elective I - Credit Hours: 3.00

18 Credits

Fall 3rd Year

- CHE 30600 - Design Of Staged Separation Processes ♦
- CHE 37700 - Momentum Transfer ♦
- CHM 37000 - Topics In Physical Chemistry
- Math Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective - Credit Hours: 3.00

17 Credits

Spring 3rd Year

- CHE 30000 - Chemical Engineering Seminar ♦
- CHE 37800 - Heat And Mass Transfer ♦
- CHE 34800 - Chemical Reaction Engineering ♦
- Technical Elective - Credit Hours: 3.00
- Engineering Elective - Credit Hours: 3.00
- General Education Elective II - Credit Hours: 3.00

17 Credits

Fall 4th Year

- CHE 40000 - Chemical Engineering Seminar ♦
- CHE 45600 - Process Dynamics And Control ♦
- CHE 43500 - Chemical Engineering Laboratory ♦
- CHE 42000 - Process Safety Management And Analysis ♦
- General Education Elective III - Credit Hours: 3.00
- General Education Elective IV - Credit Hours: 3.00

17 Credits

Spring 4th Year

- CHE 45000 - Design And Analysis Of Processing Systems ♦
- CHE Elective - Credit Hours: 3.00
- ENGR Elective - Credit Hours: 3.00
- General Education Elective V - Upper Level - Credit Hours: 3.00
- General Education Elective VI - Upper Level - Credit Hours: 3.00

16 Credits

Notes

130 Credits required for graduation.

2.0 overall and major (Chemical Engineering Core) GPA required for Bachelor of Science in Chemical Engineering degree.

Students must earn a "C" or better in CHE 20500 to enroll in any other CHE course.

Students must earn a "C-" or better in all other CHE Major Required Courses (Chemical Engineering Core).

Students may take General Education Elective IV, V, and VI for a letter grade or pass/ no pass option.

3 credits of CHE 41100, CHE 41200, CHE 49800, or CHE 49900 may be used to complete the Chemical Engineering Selective.

3 credits of CHE 41100, 41200, 49800, or 49800 may be used to complete the Engineering or Technical Selective.

Students may **not** earn credit in the following courses: ABE 20100, ABE 21000, ABE 30800, ABE 37000, IE 23000, IE 33000, ME 30900 and ME 31500.

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.

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Lyles School of Civil Engineering

About Civil Engineering

Civil engineers design and construct the world's infrastructure: buildings and bridges; tunnels, dams, and levees; harbors and canals; water-supply and waste-disposal systems; airports, highways, and railroads; pipelines and power lines.

As a Civil Engineering undergraduate student you have many opportunities to plan your curriculum and even more opportunities to build your future in civil engineering!

You can explore the nine areas of study within civil engineering along with selecting the courses to design your own plan of study. You and your advisor can discuss your career goals to tailor a program to meet your goals.

Instructional laboratories in structural behavior, hydraulics, surveying, and civil engineering materials are offered in the sophomore and junior years. Further study includes 30 credits of technical electives allowing students to tailor their studies to their specialty area of choice. Speciality areas include architectural, construction, environmental, geomatics, geotechnical, hydraulics, materials, structures, transportation, and infrastructure system engineering.

Senior design projects consist of real-world applications in theoretical role play. Recent projects have included designing possible layouts for the US-231 bypass that runs around the perimeter of campus to connect its north and south ends. Another project explored adding box seats to our basketball arena by raising the roof to make room. Another project explored a reuse design for the Tippecanoe County Superfund Site Sanitary Landfill. Students participate in these projects from site exploration, to budget management, to mock designs.

Faculty

<https://engineering.purdue.edu/CE/People/Faculty>

Contact Information

Lyles School of Civil Engineering
Delon and Elizabeth Hampton Hall of Civil Engineering
550 Stadium Mall Drive
West Lafayette, IN 47907-2051
CE Main Office: (765) 494-2166
CE Main Office Fax: (765) 494-0395

Graduate Information

For Graduate Information please see Civil Engineering Graduate Program Information.

Baccalaureate

Civil Engineering, BSCE

About the Program

The Civil Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Civil engineers design and construct the world's infrastructure: buildings and bridges; tunnels, dams, and levees; harbors and canals; water-supply and waste-disposal systems; airports, highways, and railroads; pipelines and power lines.

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Degree Requirements

132 Credits Required

Civil Engineering Major Courses

Required CE Courses (61 credits)

Grade of C- or better required

- CGT 16400 - Graphics For Civil Engineering And Construction
- MA 26100 - Multivariate Calculus
- CE 20300 - Principles And Practice Of Geomatics
- CE 29202 - Contemporary Issues In Civil Engineering
- PHYS 24100 - Electricity And Optics
- CE 29700 - Basic Mechanics I (Statics)
- MA 26500 - Linear Algebra
- CE 23100 - Engineering Materials I
- CE 27000 - Introductory Structural Mechanics
- CE 29800 - Basic Mechanics II Dynamics
- MA 26600 - Ordinary Differential Equations
- CE 33100 - Engineering Materials II
- CE 34000 - Hydraulics
- CE 34300 - Elementary Hydraulics Laboratory
- STAT 51100 - Statistical Methods
- CE 39201 - Technical Communication In Civil Engineering
- CE 39800 - Introduction To Civil Engineering Systems Design
- ME 20000 - Thermodynamics I
- CE 49800 - Civil Engineering Design Project

- COM 11400 - Fundamentals Of Speech Communication (satisfies Oral Communication for core) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

- Basic Science Selective - Credit Hours: 3.00 (satisfies Science, Tech & Society for core)

CE Technical Electives (30 credits)

[Click here for the Civil Engineering Technical Electives](#)

- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- Technical Elective IV - Credit Hours: 3.00
- Technical Elective V - Credit Hours: 3.00
- Technical Elective VI - Credit Hours: 3.00
- Technical Elective VII - Credit Hours: 3.00
- Technical Elective VIII - Credit Hours: 3.00
- Technical Elective IX - Credit Hours: 3.00
- Technical Elective X - Credit Hours: 3.00

Other Departmental/Program Course Requirements (26-30 credits)

- CHM 11500 - General Chemistry (satisfies FYE requirement); (satisfies Science for core)
- PHYS 17200 - Modern Mechanics (satisfies FYE requirement); (satisfies Science for core)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II (satisfies FYE requirement)

- MA 16500 - Analytic Geometry And Calculus I (satisfies FYE requirement); (satisfies Quant Reasoning for core) or
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies FYE requirement)

- MA 16600 - Analytic Geometry And Calculus II (satisfies FYE requirement) or
- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies FYE requirement)
- CS 15900 - Programming Applications For Engineers (satisfies FYE Science Selective requirement) or
- CHM 11600 - General Chemistry (satisfies FYE Science Selective requirement)

- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition (satisfies FYE requirement); (satisfies Written Communication and Information Literacy for core)

General Education Electives (15 credits)

(plus 1 credit from CE 29202 and 2 credits CE 39201)

[Click here for the Civil Engineering General Educ Requirements](#)

- General Education Elective I - Credit Hours: 3.00 (satisfies Humanities for core)
- General Education Elective II - Credit Hours: 3.00 (satisfies Behavioral/Social Science for core)
- General Education Elective III - Credit Hours: 3.00
- General Education Elective IV - Credit Hours: 3.00
- General Education Elective V - Credit Hours: 3.00

Optional Concentrations

- Architectural Engineering Concentration in Civil Engineering (Optional)
- Construction Engineering Concentration in Civil Engineering (Optional)
- Environmental Engineering Optional Concentration for Civil Engineering
- Geotechnical Engineering Concentration in Civil Engineering (Optional)
- Geomatics Engineering Concentration in Civil Engineering (Optional)
- Hydraulic and Hydrologic Engineering Concentration in Civil Engineering (Optional)
- Materials Engineering Concentration in Civil Engineering (Optional)
- Structural Engineering Concentration in Civil Engineering (Optional)
- Transportation and Infrastructure Systems Engineering Concentration in Civil Engineering (Optional)

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.

Program Requirements

Fall 1st Year

- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition
- General Education Elective I - Credit Hours: 3.00

16-17 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World
- FYE Science Selective - Credit Hours: 3.00

16 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- PHYS 24100 - Electricity And Optics
- CE 29700 - Basic Mechanics I (Statics)
- CE 20300 - Principles And Practice Of Geomatics
- CGT 16400 - Graphics For Civil Engineering And Construction

- CE 29202 - Contemporary Issues In Civil Engineering

18 Credits

Spring 2nd Year

- MA 26500 - Linear Algebra
- CE 23100 - Engineering Materials I
- CE 27000 - Introductory Structural Mechanics
- CE 29800 - Basic Mechanics II Dynamics
- General Education Elective II - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- MA 26600 - Ordinary Differential Equations
- CE 33100 - Engineering Materials II
- CE 34000 - Hydraulics
- CE 34300 - Elementary Hydraulics Laboratory
- Technical Elective I (Breadth) - Credit Hours: 3.00
- General Education Elective III - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- STAT 51100 - Statistical Methods
- CE 39800 - Introduction To Civil Engineering Systems Design
- CE 39201 - Technical Communication In Civil Engineering
- Technical Elective II (Breadth) - Credit Hours: 3.00
- Technical Elective III (Design) - Credit Hours: 3.00
- Basic Science Selective - Credit Hours: 3.00

17 Credits

Fall 4th Year

- ME 20000 - Thermodynamics I
- Technical Elective IV (Breadth) - Credit Hours: 3.00
- Technical Elective V (Design) - Credit Hours: 3.00
- Technical Elective VI - Credit Hours: 3.00
- Technical Elective VII - Credit Hours: 3.00
- General Education Elective IV - Credit Hours: 3.00

18 Credits

Spring 4th Year

- CE 49800 - Civil Engineering Design Project
- Technical Elective VIII (Breadth) - Credit Hours: 3.00
- Technical Elective IX (Design) - Credit Hours: 3.00
- Technical Elective X - Credit Hours: 3.00
- General Education Elective V - Credit Hours: 3.00

15 Credits

Note

Students must have a graduation index of 2.0 and a CE index (CE courses only) of 2.0.

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.

Minor

Architectural Engineering Minor

A minor in Architectural Engineering is available to all students in the College of Engineering, except students in the School of Civil Engineering. The minor is focused on high performance buildings.

Requirements for the Minor (18 credits)

Required Courses (12 credits)

- CE 31100 - Architectural Engineering
- CE 41300 - Building Envelope Design And Thermal Loads
- CE 41400 - Building Mechanical And Electrical System Design
- CE 51300 - Lighting In Buildings

Elective Courses (6 credits)

Choose courses from the list below:

- CE 37100 - Structural Analysis I
- CE 47900 - Design Of Building Components And Systems
- CE 51401 - Building Controls
- CE 51501 - Building Energy Audits
- CE 59700 - Civil Engineering Projects (Sustainable Building Design, Construction and Operation)
- ME 51800 - Analysis Of Thermal Systems
- ME 59700 - Advanced Mechanical Engineering Projects I (Solar Energy Engineering)

Notes

- Must have a grade of "C" or better in all of the courses.
- A grade of "C-" or lower" in any of the above courses is not adequate to fulfill the minor.
- All of the above prescribed minor courses must be taken at the Purdue West Lafayette campus.

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.

Division of Construction Engineering and Management

About Construction Engineering and Management

The Division of Construction Engineering and Management (CEM) offers a degree in Construction Engineering (BSCNE) which is tailored to prepare graduates for professional work in the construction industry. The Construction Engineering curriculum includes about 80 percent engineering courses and 20 percent management courses focused on the knowledge necessary for construction careers.

Construction engineers design and execute processes for building and maintaining the infrastructure of our world. The tools of the trade for today's successful construction engineer include the following: strong math, science, and computer skills; creativity; an aptitude for applying science and engineering methods to solve problems; a love of building structures such as bridges, airports, buildings, dams, and highways; an interest in working indoors and outdoors; initiative and a strong work ethic; the ability to collaborate with diverse people; good communications skills; and a desire to learn in a constantly changing environment. Students in the Construction Engineering program have the opportunity to develop additional expertise in mechanical, electrical, and other areas of engineering through minors in these fields. Construction Engineering students complete three 12-week paid internships, usually during the summer and away from home. They work as paid employees of construction contractors and construction managers and perform increasingly responsible duties in field operations, office operations, and project management

For over 18 years in a row BSCNE graduates have been hired at a 100-percent rate upon graduation by some of the 100 top U.S. construction firms.

Many construction engineers move into senior management, attaining executive positions and even ownership in a construction firm. These professionals have a passion for building structures and collaborating with a wide range of people, as well as a desire to learn in a constantly changing world.

Faculty

<https://engineering.purdue.edu/CEM/People>

Contact Information

Division of Construction Engineering and Management

Purdue University

550 Stadium Mall Drive, CIVL 1227

West Lafayette, IN 47907-2051

E-mail: CEM Information

Phone: +1 (765) 494 2240

FAX: +1 (765) 494 0644

Baccalaureate

Construction Engineering and Management, BSCNE

About the Program

The Construction Engineering and Management program is accredited by the Engineering Accreditation Commission of ABET.

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Degree Requirements

130 Credits Required

Construction Engineering Major Courses

Required CEM Courses (58 credits)

- CE 20300 - Principles And Practice Of Geomatics
- CEM 20100 - Life Cycle Engineering And Management Of Constructed Facilities
- CGT 16400 - Graphics For Civil Engineering And Construction
- CE 27000 - Introductory Structural Mechanics
- CE 23100 - Engineering Materials I
- CEM 32100 - Construction Engineering Materials Lab
- CE 29800 - Basic Mechanics II Dynamics
- CEM 30200 - Practical Applications For Construction Engineering
- CEM 32400 - Human Resource Management In Construction
- CEM 30100 - Project Control And Life Cycle Execution Of Constructed Facilities
- CE 34000 - Hydraulics
- CE 37100 - Structural Analysis I
- CE 38300 - Geotechnical Engineering I
- CEM 48500 - Legal Aspects Of Construction Engineering
- CEM 42500 - Construction Practice Project
- CE 29700 - Basic Mechanics I (Statics)
- CE 52100 - Construction Business Management
- CE 34300 - Elementary Hydraulics Laboratory
- CE 47300 - Reinforced Concrete Design
- CEM 19100 - Construction Internship I
- CEM 29100 - Construction Internship II
- CEM 39100 - Construction Internship III

CEM technical Electives - (6 credits)

- Construction Engineering and Management Supplemental Information
- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00

Other Departmental/Program Course Requirements (48-50 credits)

- MA 16500 - Analytic Geometry And Calculus I or (satisfies FYE requirement) (satisfies Quant Reasoning for core)
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies FYE requirement)
- MGMT 20000 - Introductory Accounting
- MA 26100 - Multivariate Calculus
- MA 26500 - Linear Algebra
- MA 26600 - Ordinary Differential Equations
- PHYS 24100 - Electricity And Optics
- STAT 51100 - Statistical Methods

- CHM 11500 - General Chemistry (satisfies FYE requirement) (satisfies Science for core)
- PHYS 17200 - Modern Mechanics (satisfies FYE requirement)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II (satisfies FYE requirement)

- COM 11400 - Fundamentals Of Speech Communication (satisfies Oral Com for core) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World (satisfies Oral Communication for core) (satisfies FYE requirement)

- ENGL 10800 - Accelerated First-Year Composition (satisfies FYE requirement) (satisfies Oral Com & Written Com for core) or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity

- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies FYE requirement) or
- MA 16600 - Analytic Geometry And Calculus II (satisfies FYE requirement)

- Science Selective (satisfies FYE requirement) - Credit Hours: 3.00

General Education Electives (18 credits)

- Construction Engineering and Management Supplemental General Educ Requirements
- General Education Elective I - Credit Hours: 3.00 (satisfies Humanities for core)
- General Education Elective II - Credit Hours: 3.00 (satisfies Behavioral/Social Science for core)
- General Education Elective III - Credit Hours: 3.00 (satisfies Science, Tech & Society for core)
- General Education Elective IV - Credit Hours: 3.00
- General Education Elective V - Credit Hours: 3.00
- General Education Elective VI (CEM 28000 & CEM 38000) - Credit Hours: 3.00

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.

Program Requirements

<https://engineering.purdue.edu/CEM/Academics>

Fall 1st Year

- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I

- ENGL 10800 - Accelerated First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity

13 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II

- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

- Science Selective - Credit Hours: 3.00

16 Credits

Summer 1st Year

- CEM 19100 - Construction Internship I

0 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- CEM 20100 - Life Cycle Engineering And Management Of Constructed Facilities
- CE 29700 - Basic Mechanics I (Statics)
- CE 20300 - Principles And Practice Of Geomatics
- CGT 16400 - Graphics For Civil Engineering And Construction

16 Credits

Spring 2nd Year

- MA 26600 - Ordinary Differential Equations
- CE 23100 - Engineering Materials I
- CE 27000 - Introductory Structural Mechanics
- CEM 28000 - Construction Engineering Professional Development I
- MGMT 20000 - Introductory Accounting
- PHYS 24100 - Electricity And Optics

18 Credits

Summer 2nd Year

- CEM 29100 - Construction Internship II
- Gen Ed Elective I - Credit Hours: 3.00

3 Credits

Fall 3rd Year

- MA 26500 - Linear Algebra
- CE 29800 - Basic Mechanics II Dynamics
- CEM 30100 - Project Control And Life Cycle Execution Of Constructed Facilities
- STAT 51100 - Statistical Methods
- CEM 38000 - Construction Engineering Professional Development II
- CEM 32100 - Construction Engineering Materials Lab

14 Credits

Spring 3rd Year

- CE 34000 - Hydraulics
- CE 34300 - Elementary Hydraulics Laboratory
- CE 37100 - Structural Analysis I
- CE 38300 - Geotechnical Engineering I
- CEM 30200 - Practical Applications For Construction Engineering
- Technical Elective I - Credit Hours: 3.00

16 Credits

Summer 3rd Year

- CEM 39100 - Construction Internship III
- Gen Ed Elective II - Credit Hours: 3.00

3 Credits

Fall 4th Year

- CE 47300 - Reinforced Concrete Design
- CEM 42500 - Construction Practice Project
- Technical Elective II - Credit Hours: 3.00
- CEM 32400 - Human Resource Management In Construction
- General Education Elective III - Credit Hours: 3.00

16 Credits

Spring 4th Year

- CEM 48500 - Legal Aspects Of Construction Engineering
- MGMT 30400 - Introduction To Financial Management

- CE 52100 - Construction Business Management or
- ME 20000 - Thermodynamics I

- General Education Elective IV - Credit Hours: 3.00
- General Education Elective V - Credit Hours: 3.00

15 Credits

Note

Students must have a graduation index of 2.0.

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.

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Minor

Construction Engineering Minor

Requirements for the Minor (15 credits)

Required Courses (6 credits)

- CEM 20100 - Life Cycle Engineering And Management Of Constructed Facilities
- CEM 19100 - Construction Internship I ¹
- CEM 30100 - Project Control And Life Cycle Execution Of Constructed Facilities
- CEM 29100 - Construction Internship II ^{1,2}

Elective Courses (9 credits)

- CEM 30200 - Practical Applications For Construction Engineering
- CEM 32400 - Human Resource Management In Construction
- CEM 45500 - Temporary Structures In Construction
- CEM 48500 - Legal Aspects Of Construction Engineering
- CEM 49700 - Construction Engineering Projects
- CE 30000 level or above³ - Courses related to construction must be submitted to the Chair of the Undergraduate Curriculum Committee for CEM

Notes

- Interested students should contact the Director of Internships at cem@purdue.edu
- This minor is available to students in the College of Engineering.
- Courses must be completed with a grade of "C-" or better.
- No more than one substitution from either of the above two categories is acceptable to be eligible for the Construction Engineering Minor. All courses must be taken for a grade; therefore, a transfer course must meet University guidelines for appropriate transfer of grade.
- Students may not be on academic probation to enroll in upper division work.
- Generally, all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus to be eligible for the Construction Engineering Minor. The only exceptions to this rule are as follows:
 1. One equivalent transfer course from another university can be used for an elective if the course is from an Engineering ABET-accredited program, OR
 2. One equivalent Purdue substitution may be used if it is deemed equivalent to the prescribed minor course and acceptable by the Chair of the Undergraduate Curriculum Committee for the Division of Construction Engineering and Management (CEM).
 - Exception: A student enrolled in the School of Civil Engineering cannot seek a Minor in Construction Engineering.
 - ¹ The internship shall be arranged by the student and approved by the Director of Internships for CEM.
 - ² An equivalent professional or research experience approved by the Chair of the Undergraduate Curriculum Committee for CEM.
 - ³ Courses (or topics) that satisfy this requirement may have a prerequisite. The student should consult the academic advisor in advance.

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School of Electrical and Computer Engineering

About Electrical and Computer Engineering

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.

Faculty

<https://engineering.purdue.edu/ECE/People/Faculty>

Contact Information

Purdue University
School of Electrical and Computer Engineering
Electrical Engineering Building
465 Northwestern Ave.
West Lafayette, Indiana 47907-2035
ph (765) 494-3540

Graduate Information

For Graduate Information please see Electrical and Computer Engineering Graduate Program Information.

Baccalaureate

Computer Engineering, BSCMPE

About the Program

The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET.

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).

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Degree Requirements

125 Credits Required

Required Major Courses (49 credits)

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 - Choose One Option (3-4 credits)

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

Option 1 (4 credits):

- ECE 47700 - Digital Systems Senior Project

Option 2 (4 credits):

- ECE 49022 - Electrical Engineering Senior Design Projects

Option 3 (3 credits):

Must be taken in consecutive 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 consecutive semesters.

- EPCS 41200 - Senior Design Participation In EPICS

Computer Engineering Selectives (16 credits)

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 Rerequisites)

Other Department/Program Course Requirements (76 credits)

General Engineering Requirement (10 or 14 credits)

Choose One Introductory Engineering Option and One Engineering Breadth Selective.

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

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 (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 - Choose One (3 credits)

- 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)

Option 1 (21-23 credits)

- 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)

- 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)

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)

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
- 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. 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 24 credit hours needed to satisfy the ECE General Education Requirement must come from courses at the 3000-level or above, or from courses with a required prerequisite in the same department.

Educational Diversity Requirement

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)

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

- 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

- Electrical and Computer Engineering General Education
- Computer Engineering "Special Content" Courses
- Electrical and Computer Engineering No Count List

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 General Education Elective - Credit Hours: 3.00

16 Credits

Spring 1st Year

- 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

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 General Education Elective - 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 General Education Elective - Credit Hours: 3.00

16 Credits

Fall 4th Year

- 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

16 Credits

Spring 4th Year

- 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

15 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.

Electrical Engineering, BSEE

About the Program

The Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET.

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

124 Credits Required

Required Major Courses (47 credits minimum)

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

Electrical Engineering Core Requirements (24 credits)

- 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 27000 - Introduction To Digital System Design
- ECE 30100 - Signals And Systems
- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- ECE 31100 - Electric And Magnetic Fields

Required Seminars (1 credit)

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

Advanced Electirical Engineering Selectives - Choose Three (9-11 credits)

- ECE 30500 - Semiconductor Devices
- ECE 32100 - Electromechanical Motion Devices
- ECE 36200 - Microprocessor Systems And Interfacing
- ECE 38200 - Feedback System Analysis And Design

- ECE 43800 - Digital Signal Processing With Applications or
- ECE 44000 - Transmission Of Information

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

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

Option 1 (4 credits):

- ECE 49022 - Electrical Engineering Senior Design Projects

Option 2 (4 credits):

- ECE 47700 - Digital Systems Senior Project

Option 3 (3 credits):

Must be taken in consecutive 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 consecutive semesters.

- EPCS 41200 - Senior Design Participation In EPICS

Electrical Engineering Electives (7-10 credits)

- Select from the list of Electrical Engineering Electives ([click here](#)) so that total credits for Required Major Courses is at least 47.
- Must include at least three (3) Advanced-Level Laboratory courses. Advanced-Level Laboratory Courses taken as Advanced EE Selectives (ECE 36200, ECE 43800 and ECE 44000) also contribute to the Advanced-Level Laboratory requirement. No more than two (2) of these labs may be EE "Special Content" courses.
- No more than 6 credit hours of EE "Special Content" courses can be used towards the 47 credit hours of Required Major Courses.

Other Department/Program Course Requirements (77 credits minimum)

General Engineering Requirement (10 or 14 credits)

Choose One Introductory Engineering Option and One Engineering Breadth Selective.

Introductory Engineering Options (7 or 11 credits)

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 (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 - Choose One (3 credits)

- 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 (18-20 credits)

Option 1 (18-20 credits)

- 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

Option 2 (19-21 credits)

- 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

Advanced Math Selective - Choose One (3 credits)

- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences
- MA 35100 - Elementary Linear Algebra
- 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 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)

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
- 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. 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 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

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

Complimentary Electives (up to 10 credits)

Choose additional coursework to bring total credits to the minimum 124 required for the BSEE 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 (click [here](#) to view 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

- Electrical and Computer Engineering General Education
- Electrical Engineering Electives
- Electrical and Computer Engineering No Count List

Program Requirements

The following is an example of a 4-year plan that satisfies the BSEE 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 General Education Elective - Credit Hours: 3.00

16 Credits

Spring 1st Year

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

16 Credits

Fall 2nd Year

- ECE 20000 - Electrical And Computer Engineering Seminar
- ECE 20100 - Linear Circuit Analysis I
- ECE 20700 - Electronic Measurement Techniques
- PHYS 27200 - Electric And Magnetic Interactions
- MA 26100 - Multivariate Calculus
- Foundational General Education Elective - Credit Hours: 3.00

15 Credits

Spring 2nd Year

- ECE 20200 - Linear Circuit Analysis II
- ECE 25500 - Introduction To Electronic Analysis And Design
- ECE 20800 - Electronic Devices And Design Laboratory
- MA 26600 - Ordinary Differential Equations
- Science Selective - Credit Hours: 3.00
- Foundational General Education Elective - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- ECE 30100 - Signals And Systems
- ECE 27000 - Introduction To Digital System Design
- ECE 40000 - Professional Development And Career Guidance
- Adv. EE Selective - Credit Hours: 3.00
- Complementary Ele - Credit Hours: 3.00

14 Credits

Spring 3rd Year

- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- ECE 31100 - Electric And Magnetic Fields
- MA 26500 - Linear Algebra

- Adv. EE Selective - Credit Hours: 3.00
- ECE Elective [Adv.Lab] - Credit Hour: 1.00
- ECE General Education Elective - Credit Hours: 3.00

16 Credits

Fall 4th Year

- ECE 49022 - Electrical Engineering Senior Design Projects
- ECE Elective - Credit Hours: 3.00
- Engineering Breadth Elective - Credit Hours: 3.00
- ECE General Education Elective - Credit Hours: 3.00
- Complementary Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- Adv. EE Selective w/Adv Lab - Credit Hours: 4.00
- ECE Elective w/Adv Lab - Credit Hours: 4.00
- ECE General Education Elective - Credit Hours: 3.00
- Complementary Elective - Credit Hours: 4.00

15 Credits

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.

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Minor

Electrical and Computer Engineering Minor

Requirements for the Minor (17 credits)

For BME Majors Only

Requirements for a minor in Electrical and Computer Engineering (only for students majoring in Biomedical Engineering)

- Before applying for an ECE minor, (*application must be made in person in MSEE 140. Call 765-49-43390 for an appointment*), students must have completed MA 16500, MA 16600, and PHYS 17200 (or their equivalents) with a 'C-' grade or better in each. If the application is approved, a minor in Electrical and Computer Engineering will be granted upon completion of the following 17-18 credit hours of coursework.
- All requisites for these courses must be met (non-engineering students may apply for a prerequisite override for ENGR 13100 in ECE 20100) in order to enroll in these courses. Click the link for each course to see the required requisites.
- Transfer credit may be accepted for up to two of the "Required Courses" (this includes IUPUI, the regional campuses, and study abroad credit).
- A minimum overall GPA of 2.0 is required in ECE courses to qualify for the minor. Approval of the ECE minor may be revoked if the ECE GPA falls below 2.0.
- Enrollment in all ECE courses is subject to space availability. Students requesting space in restricted ECE courses must submit an application and may need to wait until 'Open Enrollment' to register. Electrical Engineering and Computer Engineering majors are given priority.

Required Courses (11 credits)

- ECE 25500 - Introduction To Electronic Analysis And Design
- ECE 20800 - Electronic Devices And Design Laboratory
- ECE 27000 - Introduction To Digital System Design
- ECE 30100 - Signals And Systems

Elective Courses (2 courses)

- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- ECE 30500 - Semiconductor Devices
- ECE 31100 - Electric And Magnetic Fields
- ECE 32100 - Electromechanical Motion Devices
- ECE 36200 - Microprocessor Systems And Interfacing
- ECE 43800 - Digital Signal Processing With Applications
- ECE 44100 - Distributed Parameter Systems
- ECE 45300 - Fundamentals Of Nanoelectronics
- ECE 45500 - Integrated Circuit Engineering
- ECE 51100 - Psychophysics

All Majors Except BME

Requirements for a minor in Electrical and Computer Engineering (only for students not majoring in Biomedical Engineering)

- Before applying for an ECE minor, (*application must be made in person in MSEE 140. Call 765-494-3390 for an appointment*), students must have completed MA 16500, MA 16600, and PHYS 17200 (or their equivalents) with a 'C-' grade or better in each. If the application is approved, a minor in Electrical and Computer Engineering will be granted upon completion of the following 17 credit hours of coursework.
- All requisites for these courses must be met (non-engineering students may apply for a prerequisite override for ENGR 13100 in ECE 20100) in order to enroll in these courses. Click the link for each course to see the required requisites.
- Transfer credit may be accepted for up to two of the "Required Courses" (this includes IUPUI, the regional campuses, and study abroad credit).

- A minimum overall GPA of 2.0 is required in ECE courses to qualify for the minor. Approval of the ECE minor may be revoked if the ECE GPA falls below 2.0.
- Enrollment in all ECE courses is subject to space availability. Students requesting space in restricted ECE courses must submit an application and may need to wait until 'Open Enrollment' to register. Electrical Engineering and Computer Engineering majors are given priority.

Required Courses (13 credits)

- ECE 20100 - Linear Circuit Analysis I
- ECE 20200 - Linear Circuit Analysis II
- ECE 25500 - Introduction To Electronic Analysis And Design
- ECE 27000 - Introduction To Digital System Design

Elective Courses (4 credits)

- ECE 30100 - Signals And Systems and
- ECE 20700 - Electronic Measurement Techniques
- ECE 30500 - Semiconductor Devices and
ECE 20700 - Electronic Measurement Techniques
- ECE 32100 - Electromechanical Motion Devices and
ECE 20700 - Electronic Measurement Techniques
- ECE 36200 - Microprocessor Systems And Interfacing

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.

School of Engineering Education

School of Engineering Education

Within the School of Engineering Education, two distinct degree options are offered. Interdisciplinary Engineering Studies (IDES) and Multidisciplinary Engineering (MDE) are each unique pathways that serve student populations with different career interests. In particular, the IDES degree is often referred to as a "pre-professional school" program, which offers a bachelor of science degree (BS). Alternatively, MDE confers a bachelor of science in engineering (BSE). Further details of each program follow below.

The **Multidisciplinary Engineering** (MDE) mission, goals, and objectives are designed to prepare graduates to practice engineering. Typically, a plan of study is developed around a focused concentration. Students may develop their own individual plan of study or select one of these established concentrations:

- Acoustical Engineering
- Engineering Management

- General Engineering
- Visual Design Engineering
- Lighting Engineering
- Nano-Engineering
- Humanitarian Engineering
- Theatre Engineering (Limited Enrollment)
- Educational Engineering (not a teaching certified program)

Interdisciplinary Engineering Studies (IDES) is for students who want an engineering education but do not plan to practice engineering. Students are often looking ahead to attending a professional school, such as Medical School, or looking for some engineering coursework and other broad educational exposure. Choose from these concentrations:

- General Engineering Studies (NAME???)
- Pre-Professional Engineering Studies (In preparation for a professional school: Pre-Med; Pre-Law; Pre-Vet; etc)

Students must complete the requirements of the First-Year Engineering Program to be accepted into either IDES or MDE. These programs offer students the opportunity to advance to graduate school or pursue a career in industry.

Features of these undergraduate programs include:

- Flexible plan of study
- Limited enrollment
- Student planning is required in collaboration with intensive advisor counseling

Faculty

Students interested in pursuing undergraduate research opportunities in the School of Engineering Education are encouraged to contact faculty who conduct research in their areas of interest. A comprehensive list of engineering faculty is provided here.

Contact Information

Questions can be directed to the following offices.

School of Engineering Education

Purdue University
 Neil Armstrong Hall of Engineering, Room 1300
 701 W. Stadium Avenue
 West Lafayette, IN 47907
 e-mail: enr-info@purdue.edu
 phone: (765) 494-9713
 fax: (765) 494-5819

Advising: ide@ecn.purdue.edu

Baccalaureate

Interdisciplinary Engineering Studies, BS

About the Program

Interdisciplinary engineering studies (IDES) is for students who want an engineering education but do not plan to practice engineering. The program offers considerable flexibility and permits you to meet educational goals that require working at the interface between engineering and other disciplines.

School of Engineering Education

Degree Requirements

120 Credits Required

Required Major Courses (30 credits)

At least 15 credits of the 30 credits are 30000+

Economics Selective⁴

- IE 34300 - Engineering Economics
OR
- ECON 25100 - Microeconomics and
- ECON 25200 - Macroeconomics

- IDE 30100 - Professional Preparation In Interdisciplinary Engineering - Junior (Must be taken at Purdue West Lafayette)
- Engineering Design (30000+ level) - Credit Hours: 3.00 Must be approved by ENE Department (e.g. ABE 33000, AAE 25100, CE 45600, IE 38600 etc.)
- Engineering Elective - Engineering courses only - Credit Hour 23.00 (*To meet students educational objectives*)

Other Departmental /Program Course Requirements (44-50 credits)

* can be substituted with approved alternative FYE courses (i.e. ENGR 14100/14200, etc.)

- MA 16500 - Analytic Geometry And Calculus I (satisfies FYE requirement & Quantitative Reasoning for core) or
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies FYE requirement & Quantitative Reasoning for core)

- MA 16600 - Analytic Geometry And Calculus II (satisfies FYE requirement & Quantitative Reasoning for core) or
- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies FYE requirement & Quantitative Reasoning for core)

- CHM 11500 - General Chemistry (satisfies FYE requirement & Science Selective for core)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies FYE requirement) *
- ENGR 13200 - Transforming Ideas To Innovation II (satisfies FYE requirement) *
- ENGL 10600 - First-Year Composition (satisfies FYE requirement & General Education & Written Comm & Info Lit for core)
- COM 11400 - Fundamentals Of Speech Communication (satisfies General Education requirement & Oral Communication for core)

- PHYS 17200 - Modern Mechanics (satisfies FYE requirement & Science Selective for core)
- CS 15900 - Programming Applications For Engineers (satisfies FYE requirement) or
- CHM 11600 - General Chemistry (satisfies FYE requirement)
- MA 26100 - Multivariate Calculus (satisfies math (MBSE) requirement)
- MA 26200 - Linear Algebra And Differential Equations (satisfies math (MBSE) requirement)
- MA 26500 - Linear Algebra (satisfies math (MBSE) requirement) and
- MA 26600 - Ordinary Differential Equations (satisfies math (MBSE) requirement)
- PHYS 24100 - Electricity And Optics or
- PHYS 27200 - Electric And Magnetic Interactions or
- BIOL 11000 - Fundamentals Of Biology I or
- BIOL 23000 - Biology Of The Living Cell
- IDE 36000 - Multidisciplinary Engineering Statistics or approved equivalent (IE 23000, IE 33000, ECE 30200, CHE 32000, STAT 35000, or STAT 51100) - *if non-engineering statistics selective, it counts as MBSE; if ENGR, count as additional ENGR course.*

Area Electives (29 credits maximum)

Chosen to satisfy student's educational objectives.

Very highly recommended:

- CGT 11000 - Technical Graphics Communications or
- CGT 16300 - Graphical Communication And Spatial Analysis or
- CGT 16400 - Graphics For Civil Engineering And Construction

General Education (24 credits)

NOTE: includes ENGL 106 and COM 114 (7 credits) listed above, plus 17-18 credits

- General Education 1 - HSS - Credit Hours: 3.00
- General Education 2 - BSS - Credit Hours: 3.00
- General Education 3 - STS - Credit Hours: 3.00
- General Education 4 - Credit Hours: 3.00
- General Education 5 - Credit Hours: 3.00
- General Education 6 - Credit Hours: 2.00- 3.00
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

Optional Concentrations

- Engineering Science Studies
- Pre-Medical Engineering Studies

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.

Program Requirements

Fall 1st Year

- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity

14 Credits

Spring 1st Year

- ENGR 13200 - Transforming Ideas To Innovation II
- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics
- CS 15900 - Programming Applications For Engineers or
- CHM 11600 - General Chemistry
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

16-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- PHYS 24100 - Electricity And Optics or
- Science Selective - Credit Hours: 3.00 †

- Area Elective 1 †¹ - Credit Hours: 3.00
- Area Elective 2 †¹ - Credit Hours: 3.00
- Engineering 20000+level Elective^{†2} - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- MA 26200 - Linear Algebra And Differential Equations
- Engineering 20000+level^{†2} - Credit Hours: 2.00
- Engineering 20000+level Elective^{†2}- Credit Hours: 3.00
- Area Elective 3^{†1} - Credit Hours: 3.00
- Area Elective 4^{†1} - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- IDE 30100 - Professional Preparation In Interdisciplinary Engineering ♦
- General Education 1 (Foundational Outcome H) - Credit Hours: 3.00
- Engineering 20000+level Elective^{†2} - Credit Hours: 3.00
- Area Elective 5^{†1} - Credit Hours: 3.00
- Area Elective 6^{†1} - Credit Hours: 3.00
- Area Elective 7^{†1} - Credit Hours: 2.00

15 Credits

Spring 3rd Year

- IDE 36000 - Multidisciplinary Engineering Statistics †²
- Engineering 30000+level Elective^{†2} - Credit Hours: 3.00
- General Education 2 (Foundational Outcome BSS) - Credit Hours: 3.00
- General Education 3 (Foundational Outcome STS) - Credit Hours: 3.00
- Area Elective 8^{†1} - Credit Hours: 3.00

15 Credits

Fall 4th Year

- IE 34300 - Engineering Economics - Economics Elective †
- Engineering Design 30000+level^{†5} - Credit Hours: 3.00
- General Education 4^{†3} (30000 level or non-intro) - Credit Hours: 3.00
- General Education 5^{†3} - Credit Hours: 2.00
- Area Elective 9^{†1} - Credit Hours: 3.00

14 Credits

Spring 4th Year

- Engineering 30000+level Elective^{†2} - Credit Hours: 3.00
- Engineering 30000+level Elective ^{†2} - Credit Hours: 3.00
- General Education 6^{†3} (30000 level or non-intro) - Credit Hours: 3.00
- Area Elective 10^{†1} - Credit Hours: 3.00
- MBSE Elective - Credit Hours: 3.00

15 Credits

Notes

MBSE - Math, Basic Science, & Engineering - 44 credits minimum from excluding FYE courses (Engineering, CS, Mathematics, or science courses as needed)

**Satisfies a Non-departmental Major Course Requirement.

†Multiple options are available - the most common is listed. †1 statics options, †2thermodynamics options †3 area electives are chosen with aid of adviser to advance the student's educational objectives †4 dynamics options †5 engineering selectives are chosen with aid of adviser to advance the student's educational objectives †6 fluids option †7 materials options †8 statistics options †9 design selective †10 Capstone design selective.

- †Multiple options are available: common option listed. †1 Area electives are chosen with aid of advisor to advance the student's educational objectives. Area classes for this plan of study are used to complete the requirements to take the MCATS and attend medical school. Courses to be completed include but are not limited to: 2 semesters General Biology with labs (minimum - should take more); 2 semesters General Chemistry with labs; 2 semesters Organic Chemistry with labs; 2 semesters Physics with labs; 2 semesters English Composition; 1 semester Biochemistry (no lab required; (* IU MD and Marian DO programs will require as of fall 2015); Anatomy and Physiology (not required but highly recommended for MCAT); 1 semester General Psychology (*IU MD and Marian DO programs will require as of fall 2015); 1 semester sociology (* IU MD and Marian DO programs will require as of fall 2015); other recommended courses Statistics. Generally, a grade below a C is not acceptable for a prerequisite course.
- †2 engineering electives are chosen with aid of advisor to advance the student's educational objectives. †3General Education courses can be taken from CLA, Krannert or Honors - consult advisor. †4 statistics selective could be approved equivalent (IE 23000/33000 /ECE 30200 /CHE 32000 /STAT 35000 /STAT 51100 - (if non engineering statistics selective chosen fulfills MBSE, but would require another 3 credit engineering course to be taken); †5 design selective - consult advisor for course selection. Engineering courses (30 credits of 20000+ level engineering courses, of which at least 15 credits are 30000+; MAX credits allowed in any one engineering discipline is 24.)
- 120 semester credits required for Bachelor of Science degree.

- Graduation Index of 2.0 or higher and a min. GPA of 2.0 in Engineering courses at 20000+ level included in the POS. All other Purdue University graduation requirements including "There must be 32 credits of 30000+ level for graduation" must be satisfied.
- *THE PLAN OF STUDY FROM 3RD SEMESTER ONWARDS SHOULD BE FILLED BY STUDENT AFTER CONSULTATION WITH ACADEMIC ADVISER.

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.

Multidisciplinary Engineering, BSE

About the Program

The Multidisciplinary Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Multidisciplinary engineering is for students who plan to practice engineering as a career but whose specific career goals cannot be accommodated within one of the traditional engineering fields. The program offers considerable flexibility and permits you to choose from an established plan of study, or develop an individual plan of study to meet educational goals that can require bringing together multiple engineering disciplines, or non-engineering disciplines, at an advanced level to solve societal challenges. Established plans of study in the program include acoustical engineering, engineering management, visual design engineering, and general engineering, to name a few.

School of Engineering Education

Degree Requirements

120 Credits Required

Multidisciplinary Engineering Major Courses (45 credits)

(Included 18+ credits of 30000 level; 6 credits 40000 level - A maximum of 24 credits allowed in any one engineering discipline)

Required Engineering Core (18-26 credits)

- ECE 20100 - Linear Circuit Analysis I or
- Equivalent - Credit Hours: 3.00

- IDE 30100 - Professional Preparation In Interdisciplinary Engineering (Must be taken at Purdue West Lafayette)
or
- IDE 48700 - Multidisciplinary Engineering Senior Professional Development (Must be taken at Purdue West Lafayette)
- ME 27000 - Basic Mechanics I * and
- ME 27400 - Basic Mechanics II *
OR
- AAE 20300 - Aeromechanics I *
OR
- CE 29700 - Basic Mechanics I (Statics) * and
- CE 29800 - Basic Mechanics II Dynamics *
- ME 30900 - Fluid Mechanics or
- CE 34000 - Hydraulics or
- AAE 33300 - Fluid Mechanics or
- CHE 37700 - Momentum Transfer or
- Equivalent - Credit Hours: 3.00
- ME 20000 - Thermodynamics I or
- ABE 21000 - Thermodynamics Principles Of Engineering And Biological Systems or
- CHE 21100 - Introductory Chemical Engineering Thermodynamics or
- Equivalent - Credit Hours: 3.00
- IE 34300 - Engineering Economics or
- IDE 48300 - Multidisciplinary Engineering Analysis And Decision Making or
- Equivalent - Credit Hours: 1.00-3.00
- EPCS 41100 - Senior Design Participation In EPICS and
- EPCS 41200 - Senior Design Participation In EPICS
OR
- IDE 48400 - Multidisciplinary Engineering Design Methodology and
- IDE 48500 - Multidisciplinary Engineering Design Project or Equivalent - Credit Hours: 3.00-4.00 (must be taken at Purdue West Lafayette)

Engineering Selectives (8 credits)

Engineering Design Examples (3 credits)

(Must be approved by Department of Engineering Education)

- ABE 33000 - Design Of Machine Components
- AAE 25100 - Introduction To Aerospace Design
- IE 38600 - Work Analysis And Design I

Hands-on Lab Examples (2 credits)

- AAE 20401 - Aeromechanics II Laboratory

- AAE 33301 - Fluid Mechanics Laboratory
- ECE 20700 - Electronic Measurement Techniques
- CE 34300 - Elementary Hydraulics Laboratory
- ME 30900 - Fluid Mechanics

Materials/Strength of Materials Examples (3 credits)

- MSE 23000 - Structure And Properties Of Materials
- NUCL 27300 - Mechanics Of Materials
- CE 23100 - Engineering Materials I

Engineering Area Elective Courses (20-21 credits)

Beginning Course (3-4 credits)

- ABE 21000 - Thermodynamics Principles Of Engineering And Biological Systems
- BME 20100 - Biomolecules: Structure, Function, And Engineering Applications
- CE 20300 - Principles And Practice Of Geomatics
- NUCL 20000 - Introduction to Nuclear Engineering

Core Course (3 credits)

- ABE 43500 - Hydraulic Control Systems For Mobile Equipment
- AAE 33400 - Aerodynamics
- AAE 37200 - Jet Propulsion Power Plants
- BME 30400 - Biomedical Transport Fundamentals
- CE 27000 - Introductory Structural Mechanics

Advanced Course (3 credits)

- ABE 30100 - Numerical And Computational Modeling In Biological Engineering
- ABE 30500 - Physical Properties Of Biological Materials
- ABE 32000 - Solid Modeling, Simulation, And Analysis
- ABE 32500 - Soil And Water Resource Engineering
- CE 30300 - Engineering Surveying

Engineering Electives (3-10 credits)

- Engineering courses only (to meet educational objectives)

Other Departmental/Program Course Requirements (47-54 credits)

**can be substituted with approved alternative FYE courses*

- MA 16500 - Analytic Geometry And Calculus I (satisfies FYE requirement & Quantitative Reasoning for core) or

- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies FYE requirement & Quantitative Reasoning for core)
- MA 16600 - Analytic Geometry And Calculus II (satisfies FYE requirement & Quantitative Reasoning for core) or
- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies FYE requirement & Quantitative Reasoning for core)
- CHM 11500 - General Chemistry (satisfies FYE requirement & Science Selective for core)
- ENGR 13100 - Transforming Ideas To Innovation I * (satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II * (satisfies FYE requirement)
- COM 11400 - Fundamentals Of Speech Communication (satisfies General Education requirement & Oral Communication for core)
- PHYS 17200 - Modern Mechanics (satisfies FYE requirement & Science Selective for core)
- CS 15900 - Programming Applications For Engineers (satisfies FYE requirement) or
- CHM 11600 - General Chemistry (satisfies FYE requirement)
- MA 26200 - Linear Algebra And Differential Equations (satisfies Math requirement)
OR
- MA 26500 - Linear Algebra (satisfies Math requirement) and
- MA 26600 - Ordinary Differential Equations (satisfies Math requirement)
- MA 26100 - Multivariate Calculus (satisfies Math requirement)
- ENGL 10600 - First-Year Composition (satisfies FYE requirement, & general education, & Written Communication, & Information Literacy for core)

Sophomore Science Selective (3 credits)

- PHYS 24100 - Electricity And Optics
- PHYS 27200 - Electric And Magnetic Interactions
- BIOL 11000 - Fundamentals Of Biology I
- BIOL 23000 - Biology Of The Living Cell

Statistics Selective (3 credits)

Counts as either engineering or basic science & math

- IE 23000 - Probability And Statistics In Engineering I
- IE 33000 - Probability And Statistics In Engineering II
- IDE 36000 - Multidisciplinary Engineering Statistics
- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- CHE 32000 - Statistical Modeling And Quality Enhancement
- STAT 35000 - Introduction To Statistics
- STAT 51100 - Statistical Methods

Hands-on Lab (1 credit)

Not computer lab

- CHM 11600 - General Chemistry
- THTR (Sound Studio)
- AD
- Engineering Lab

Area Electives (1-12 credits)

Required area course(s) for General Engineering (Chosen to satisfy student's educational objectives):

- CGT 11000 - Technical Graphics Communications or
- CGT 16300 - Graphical Communication And Spatial Analysis or
- CGT 16400 - Graphics For Civil Engineering And Construction

General Education (24 credits)

- General Education 1 - Credit Hours: 3.00
- General Education 2 - Credit Hours: 3.00
- General Education 3 - Credit Hours: 3.00
- General Education 4 - Credit Hours: 3.00
- General Education 5 - Credit Hours: 3.00
- General Education 6 - Credit Hours: 3.00
- ENGL 10600 - First-Year Composition
- COM 11400 - Fundamentals Of Speech Communication

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](#).

Optional Concentrations

- Acoustical Engineering Concentration for Multidisciplinary Engineering

- Educational Engineering Concentration for Multidisciplinary Engineering
- Engineering Management Concentration in Multidisciplinary Engineering
- General Engineering Concentration in Multidisciplinary Engineering
- Humanitarian Engineering Concentration for Multidisciplinary Engineering
- Lighting Engineering Concentration in Multidisciplinary Engineering
- Nano Engineering Concentration for Multidisciplinary Engineering
- Ocean Engineering Concentration in Multidisciplinary Engineering
- Theatre Engineering Concentration in Multidisciplinary Engineering
- Visual Design Engineering Concentration for Multidisciplinary Engineering

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry
- ENGL 10600 - First-Year Composition
- MA 16500 - Analytic Geometry And Calculus I
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGR 13100 - Transforming Ideas To Innovation I

14 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or
- COM 11400 - Fundamentals Of Speech Communication
- CS 15900 - Programming Applications For Engineers or
- CHM 11600 - General Chemistry

16-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- ME 27000 - Basic Mechanics I ¹
- ME 20000 - Thermodynamics I ²
- Area Elective³ - Credit Hours: 3.00
- PHYS 24100 - Electricity And Optics or
- Science Selective - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- MA 26200 - Linear Algebra And Differential Equations
- ME 27400 - Basic Mechanics II ⁴
- ECE 20100 - Linear Circuit Analysis I
- ECE 20700 - Electronic Measurement Techniques
- CGT 16300 - Graphical Communication And Spatial Analysis
- Area Elective³ - Credit Hours: 2.00

15 Credits

Fall 3rd Year

- Engineering Class (Intro)⁵ - Credit Hours: 3.00
- CE 34000 - Hydraulics ⁶
- CE 34300 - Elementary Hydraulics Laboratory
- MSE 23000 - Structure And Properties Of Materials ⁷
- IDE 30100 - Professional Preparation In Interdisciplinary Engineering ♦
- General Education 1 (Core outcome H) - Credit Hours: 3.00

14 Credits

Spring 3rd Year

- IDE 36000 - Multidisciplinary Engineering Statistics ⁸
- Engineering Class⁵ (follow-up) - Credit Hours: 1.00
- Engineering Class⁹ (follow-up) - Credit Hours: 2.00
- General Education 4 (30000 level or non-intro) - Credit Hours: 3.00
- General Education 2 (Core Outcome BSS) - Credit Hours: 3.00
- Area Elective - Credit Hours: 3.00

15 Credits

Fall 4th Year

- IDE 48300 - Multidisciplinary Engineering Analysis And Decision Making
- IDE 48400 - Multidisciplinary Engineering Design Methodology
- IDE 48700 - Multidisciplinary Engineering Senior Professional Development ♦
- Engineering Class 40000+ level⁵ (advanced) - Credit Hours: 3.00
- General Education 3 (Core Outcome STS) - Credit Hours: 3.00
- General Education 5 - Credit Hours: 3.00

- Area Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- IDE 48500 - Multidisciplinary Engineering Design Project ♦¹⁰
- AREA MBS or other - Credit Hours: 3.00
- Area Elective - Credit Hours: 3.00
- Engineering Class 30000+ level - Credit Hours: 3.00
- General Education 6 (30000+ level or non-intro) - Credit Hours: 3.00

15 Credits

Notes

- * Can substitute with approved alternative FYE courses: i.e. ENGR 141/142, etc.
- ** Satisfies a non-departmental Major Course Requirement.
- 2.0 Graduation GPA required for Bachelor of Science in Engineering Degree.
- Consultation required with Academic Advisor to complete Third Semester to End of coursework.

Multiple Options are available - the most common is listed:

- +1 statics options
- +2 thermodynamics options
- +3 area electives are chosen with aid of advisor to advance the student's educational objectives
- +4 dynamics options
- +5 engineering selectives are chosen with aid of advisor to advance the student's educational objectives
- +6 fluids option
- +7 materials options
- +8 statistics options
- +9 design selective
- +10 Capstone design selective

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.

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Division of Environmental and Ecological Engineering

About Environmental and Ecological Engineering

Environmental and Ecological engineers use the principles of systems engineering, biology, and chemistry to develop strategies to protect human and environmental health, and design sustainable systems and technologies. Our unique name, Environmental and Ecological Engineering, was chosen to highlight our approach to managing complex problems with an integrated perspective that considers both environmental issues and ecological interactions. In the undergraduate curriculum there is an early focus on systems thinking and systems understanding with the inclusion of significant course requirements in ecology, sustainability, and industrial ecology. The EEE program strives for resilient design thinking that takes into account complexity and connectivity between systems.

Employment opportunities for EEE graduates are excellent. Most businesses, industries, all levels of government and many international organizations hire environmental and ecological engineers. Graduates are prepared to enter a wide-range of employment sectors in environmental and engineering fields including the industrial and construction, government, consulting, municipal and public service, non-governmental organizations (NGOs) and education sectors. Common career pathways center around:

Water and Watershed Stewardship: Ensuring that engineered systems and ecological systems interact sustainably.

Pollution Control, Monitoring, Abatement and Remediation: Wastewater, soil and air treatment/control, industrial waste control and recycling.

Industrial Sustainability: Optimize industrial resource use; analyze and control of complete life-cycles of materials; industrial system redesign; energy efficiency optimization.

Sustainability: Provide for current needs without sacrificing future ability to meet needs. Consider the whole system, including complex interactions of environmental, technological and societal systems.

The U.S. Dept. of Labor projects substantial growth in jobs for the foreseeable future. Starting salaries are comparable to other Engineering fields and opportunities for advancement to positions of responsibility are excellent. Among the 14 "**Grand Challenges of Engineering**" announced by the National Academy of Engineering six of the 14 are explicitly in the domain of Environmental and Ecological engineering. Environmental engineering has a clear impact on societies and quality of life. Students interested in engineering that can make a positive difference for people should consider Environmental and Ecological Engineering. Meet with an advisor or faculty member to craft an individualized plan of study to meet your career goals.

Research within Environmental and Ecological Engineering may be characterized as being multidisciplinary and focused on cutting edge issues. The EEE discovery mission is positioned to respond to society's need to understand the world we live in, and to develop strategies for sustainably managing Earth's limited resources and ecosystems so that they will be available for generations to come. Topics emphasized within the EEE research portfolio include: environmental fate of air, water, and soil contaminants; sustainable urban design; renewable energy and the water-energy nexus; water and wastewater treatment; sustainable industrial systems; water, air, and nutrient cycling; sustainability engineering education; bio-based materials and products; industrial ecology and industrial processes; air quality.

Mission Statement

The Division of Environmental and Ecological Engineering (EEE) furthers the learning, discovery, and engagement missions of the Purdue College of Engineering with a focus on understanding the ways in which all engineering activities affect and are affected by the environment. EEE will help the College fulfill the responsibility of service to the state, the nation, and the world through innovative and comprehensive undergraduate and graduate education, collaborative and wide-reaching research and discovery, and the assumption of ever-greater levels of leadership in addressing global environmental and ecological problems.

Program Educational Objectives

Graduates of the EEE Undergraduate Program will:

1. Be prepared to assume immediate employment in the field of environmental & ecological engineering or to continue education in an advanced degree program;
2. Participate fully & ethically in the advancement of the profession within five years of graduation, as measured by one or more of the following:
 - a. Achievement of, or significant progress toward, professional licensure
 - b. Achievement of, or significant progress toward, an advanced degree
 - c. Publication of research results and/or field reports
 - d. Advancement to a leadership role within an engineering organization
 - e. Advancement to a leadership role within organizations, agencies, or companies who offer solutions to major societal and environmental issues

Student Outcomes

Upon graduation, graduates of EEE will show:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Faculty

<https://engineering.purdue.edu/EEE/People>

Contact Information

Division of Environmental and Ecological Engineering

Purdue University

Potter Engineering Center, Room 364

500 Central Drive

West Lafayette, IN 47907-2022

Phone: (765) 496-9697

Fax: (754) 494-4482

Email: eee@purdue.edu

Baccalaureate

Environmental and Ecological Engineering, BSEEE

About the Program

The Environmental and Ecological Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Environmental and Ecological engineers use the principles of systems engineering, biology, and chemistry to develop strategies to protect human and environmental health, and design sustainable systems and technologies. Our unique name, Environmental and Ecological Engineering, was chosen to highlight our approach to managing complex problems with an integrated perspective that considers both environmental issues and ecological interactions. In the undergraduate curriculum there is an early focus on systems thinking and systems understanding with the inclusion of significant course requirements in ecology, sustainability, and industrial ecology. The EEE program strives for resilient design thinking that takes into account complexity and connectivity between systems.

Employment opportunities for EEE graduates are excellent. Most businesses, industries, all levels of government and many international organizations hire environmental and ecological engineers. Graduates are prepared to enter a wide-range of employment sectors in environmental and engineering fields including the industrial and construction, government, consulting, municipal and public service, non-governmental organizations (NGOs) and education sectors. Common career pathways center around:

- **Water and Watershed Stewardship:** Ensuring that engineered systems and ecological systems interact sustainably.
- **Pollution Control, Monitoring, Abatement and Remediation:** Wastewater, soil and air treatment/control, industrial waste control and recycling.
- **Industrial Sustainability:** Optimize industrial resource use; analyze and control of complete life-cycles of materials; industrial system redesign; energy efficiency optimization.
- **Sustainability:** Provide for current needs without sacrificing future ability to meet needs. Consider the whole system, including complex interactions of environmental, technological and societal systems.
- The U.S. Dept. of Labor projects substantial growth in jobs for the foreseeable future. Starting salaries are comparable to other Engineering fields and opportunities for advancement to positions of responsibility are excellent. Among the 14 "**Grand Challenges of Engineering**" announced by the National Academy of Engineering six of the 14 are explicitly in the domain of Environmental and Ecological engineering. Environmental engineering has a clear impact on societies and quality of life. Students interested in engineering that can make a positive difference for people should consider Environmental and Ecological Engineering. Meet with an advisor or faculty member to craft an individualized plan of study to meet your career goals.
- **Research** within Environmental and Ecological Engineering may be characterized as being multidisciplinary and focused on cutting edge issues. The EEE discovery mission is positioned to respond to society's need to understand the world we live in, and to develop strategies for sustainably managing Earth's limited resources and ecosystems so that they will be available for generations to come. Topics emphasized within the EEE research portfolio include: environmental fate of air, water, and soil contaminants; sustainable urban design; renewable energy and the water-energy nexus; water and wastewater treatment; sustainable industrial systems; water, air, and nutrient cycling; sustainability engineering education; bio-based materials and products; industrial ecology and industrial processes; air quality.

Mission Statement

The Division of Environmental and Ecological Engineering (EEE) furthers the learning, discovery, and engagement missions of the Purdue College of Engineering with a focus on understanding the ways in which all engineering activities affect and are affected by the environment. EEE will help the College fulfill the responsibility of service to the state, the nation, and the world through innovative and comprehensive undergraduate and graduate education, collaborative and wide-reaching research and discovery, and the assumption of ever-greater levels of leadership in addressing global environmental and ecological problems..

Program Educational Objectives

Graduates of the EEE Undergraduate Program will:

1. Be prepared to assume immediate employment in the field of environmental and ecological engineering or to continue education in an advanced degree program;
2. Participate fully & ethically in the advancement of the profession within five years of graduation, as measured by one or more of the following:
 - a. Achievement of, or significant progress toward, professional licensure
 - b. Achievement of, or significant progress toward, an advanced degree
 - c. Publication of research results and/or field reports
 - d. Advancement to a leadership role within an engineering organization
 - e. Advancement to a leadership role within organizations, agencies, or companies who offer solutions to major societal and environmental issues

Program Outcomes

Upon graduation, graduates of EEE will show:

- a. An ability to apply knowledge of mathematics, science and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multidisciplinary team
- e. An ability to identify, formulate, and solve engineering problems
- f. An understanding of professional and ethical responsibility
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- i. A recognition of the need for, and an ability to engage in life-long learning
- j. A knowledge of contemporary issues
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Degree Requirements

128 Credits Required

Departmental/Program Major Courses (46 credits)

Required Major Courses (23 credits)

- EEE 25000 - Environmental, Ecological, and Engineering Systems
- EEE 29000 - Introduction to Environmental And Ecological Engineering Seminar
- EEE 30000 - Environmental And Ecological Systems Modeling
- EEE 36000 - Environmental And Ecological Engineering Laboratory
- EEE 39000 - Environmental And Ecological Engineering Professional Practice Seminar
- EEE 43000 - Industrial Ecology And Life Cycle Analysis

- EEE 48000 - Environmental And Ecological Engineering Senior Design - Fall Credit Hours: 1.00
- EEE 48000 - Environmental And Ecological Engineering Senior Design - Spring Credit Hours: 2.00
- CE 35000 - Introduction To Environmental And Ecological Engineering or
- EEE 35000 - Introduction To Environmental And Ecological Engineering
- CE 35500 - Engineering Environmental Sustainability or
- EEE 35500 - Engineering Environmental Sustainability

Major Selectives (18 credits) & Technical Electives (5 credits)

- Environmental and Ecological Engineering Selectives
- EEE Selective 1 - Category A - Credit Hours: 3.00
- EEE Selective 2 - Category B - Credit Hours: 3.00
- EEE Selective 3 - Category C - Credit Hours: 3.00
- EEE Selective 4 - Credit Hours: 3.00
- EEE Selective 5 - Credit Hours: 3.00
- EEE Selective 6 - Credit Hours: 3.00
- Technical Elective 1 - Credit Hours: 2.00
- Technical Elective 2 - Credit Hours: 3.00

Other Departmental/Program Course Requirements (55 credits)

*satisfies First Year Engineering requirement

- ENGR 13100 - Transforming Ideas To Innovation I * (Satisfies Information Literacy for core)
- ENGR 13200 - Transforming Ideas To Innovation II *
- MA 16500 - Analytic Geometry And Calculus I * (Satisfies Math for core)
- MA 16600 - Analytic Geometry And Calculus II *
- CHM 11500 - General Chemistry * (Satisfies Science for core)
- CHM 11600 - General Chemistry *
- PHYS 17200 - Modern Mechanics *
(Satisfies Science for core)
- MA 26100 - Multivariate Calculus
- MA 26200 - Linear Algebra And Differential Equations
- CE 29700 - Basic Mechanics I (Statics) or
- ME 27000 - Basic Mechanics I
- ME 20000 - Thermodynamics I
- CE 29800 - Basic Mechanics II Dynamics or
- ME 27400 - Basic Mechanics II
- CE 34000 - Hydraulics and
- CE 34300 - Elementary Hydraulics Laboratory

Choose Statistics course:

- STAT 35000 - Introduction To Statistics or
- IE 23000 - Probability And Statistics In Engineering I or
- IE 33000 - Probability And Statistics In Engineering II

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior (Satisfies Science, Technology, & Society for core)
- BIOL 28600 - Introduction To Ecology And Evolution

- Choose Advanced Ecology course:
- BIOL 48300 - Great Issues: Environmental And Conservation Biology or
- BIOL 58500 - Ecology

EEE General Education Electives (24 credits) and Elective (2 - 3 credits)

Environmental and Ecological Engineering Gen Ed Requirements can be used to satisfy University Core Requirements. This is noted below. Therefore, students should also reference the University Core Requirements section below.

- Satisfies Humanities for core - Credit Hours: 3.00
- Satisfies Behavior/Social Science for core - Credit Hours: 3.00
- *Satisfies Written Communication for core - CreditHours: 3.00 - 4.00
- *Satisfies Oral Communication for core - Credit Hours: 3.00
- EEE intersection of Society/Environment - Credit Hours: 3.00
- Additional 3 Credit Hours
- Additional 3 Credit Hours
- Additional 3 Credit Hours
- Elective - Credit Hours: 2.00 - 3.00

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.

Program Requirements

Fall 1st Year

- ENGR 13100 - Transforming Ideas To Innovation I ♦
- MA 16500 - Analytic Geometry And Calculus I ♦
- CHM 11500 - General Chemistry ♦
- University Core (Written Communication) - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 2.00

15 Credits

Spring 1st Year

- ENGR 13200 - Transforming Ideas To Innovation II ♦
- MA 16600 - Analytic Geometry And Calculus II ♦
- CHM 11600 - General Chemistry ♦
- PHYS 17200 - Modern Mechanics ♦
- University Core (Oral Communication) - Credit Hours: 3.00

17 Credits

Fall 2nd Year

- EEE 25000 - Environmental, Ecological, and Engineering Systems
- EEE 29000 - Introduction to Environmental And Ecological Engineering Seminar
- EEE 35500 - Engineering Environmental Sustainability
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- MA 26100 - Multivariate Calculus ♦
- General Education Elective - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- EEE 35000 - Introduction To Environmental And Ecological Engineering ♦
- MA 26200 - Linear Algebra And Differential Equations
- ME 20000 - Thermodynamics I

- CE 29700 - Basic Mechanics I (Statics) or
- ME 27000 - Basic Mechanics I ♦

- General Education Elective - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- EEE 36000 - Environmental And Ecological Engineering Laboratory ♦ or
- EEE Selective 2 - Category B - Credit Hours: 3.00

- CE 29800 - Basic Mechanics II Dynamics or
- ME 27400 - Basic Mechanics II ♦

Choose Statistics course:

- STAT 35000 - Introduction To Statistics or
- IE 23000 - Probability And Statistics In Engineering I or
- IE 33000 - Probability And Statistics In Engineering II

- Technical Elective 1 - Credit Hours: 2.00
- EEE Selective 1 - Category A - Credit Hours: 3.00
- General Education Elective - Credit Hours: 3.00

17 Credits

Spring 3rd Year

- EEE 30000 - Environmental And Ecological Systems Modeling
- EEE 39000 - Environmental And Ecological Engineering Professional Practice Seminar
- EEE 43000 - Industrial Ecology And Life Cycle Analysis
- BIOL 28600 - Introduction To Ecology And Evolution
- EEE 36000 - Environmental And Ecological Engineering Laboratory ♦
- CE 34000 - Hydraulics and
- CE 34300 - Elementary Hydraulics Laboratory
- EEE Selective 2 - Category B - Credit Hours: 3.00

16 Credits

Fall 4th Year

- EEE 48000 - Environmental And Ecological Engineering Senior Design ♦

Choose Advanced Ecology course:

- BIOL 58500 - Ecology or
- BIOL 48300 - Great Issues: Environmental And Conservation Biology

- EEE Selective 3 - Category C - Credit Hours: 3.00
- EEE Selective 4 - Credit Hours: 3.00
- General Education Elective - Credit Hours: 3.00
- Technical Elective 2 - Credit Hours: 3.00

16 Credits

Spring 4th Year

- EEE 48000 - Environmental And Ecological Engineering Senior Design
- EEE Selective 5 - Credit Hours: 3.00
- EEE Selective 6 - Credit Hours: 3.00
- General Education Elective - Credit Hours: 3.00
- General Education Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15 Credits

Notes

Students must have 32 credits at the 30000 level or above taken at Purdue.

2.0 Graduation GPA required for Bachelor of Science degree.

2.0 GPA required in College of Engineering courses at the 20000-level and above.

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

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

Minor

Environmental and Ecological Engineering Minor

EEE offers a minor in **Environmental and Ecological Engineering**, as a mechanism for students in all branches of engineering, and other related fields, to gain expertise and qualifications in EEE fields. The minor is most appropriate for students who have particular environmental interests in engineering, or who want to develop a career at the interface of EEE and their chosen major field. Environmental concerns touch all aspects of engineering, making this an attractive option for many students, and an attractive set of qualifications for many prospective employers.

The minor consists of six courses, and is available to any student at Purdue who has met the co- and/or pre-requisites for courses in the EEE minor.

Requirements for the Minor (17-18 Credits)

Required Courses (11-12 credits)

- EEE 35000 - Introduction To Environmental And Ecological Engineering or
- CE 35000 - Introduction To Environmental And Ecological Engineering or
- ABE 32500 - Soil And Water Resource Engineering

- CE 35500 - Engineering Environmental Sustainability or
- EEE 35500 - Engineering Environmental Sustainability

- EEE 43000 - Industrial Ecology And Life Cycle Analysis or
- EEE 53000 - Life Cycle Assessment: Principles And Applications

- BIOL 28600 - Introduction To Ecology And Evolution or
- FNR 59800 - Topical Problems In Forestry And Natural Resources (Course Title: Urban Ecology)

Selective Courses - Choose Two (6 credits minimum)

- Environmental and Ecological Engineering Minor Selectives

Notes

- Students must earn a "C" or better grade in any course used to fulfill a requirement for the Environmental and Ecological Engineering minor.

Disclaimer

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School of Industrial Engineering

About Industrial Engineering

Industrial engineers design, analyze, and manage complex human-integrated systems such as manufacturing systems, supply chain networks, and service systems. These systems typically consist of a combination of people, information, material, and equipment. In such systems industrial engineers determine how to optimize the system for maximum efficiency, effectiveness, throughput, safety, or some other objective of interest to the stakeholders of the system. To achieve these objectives, an industrial engineer draws upon knowledge of mathematics, along with physical, engineering, management, and behavioral sciences to function as a problem-solver, innovator, designer, coordinator, and system integrator. Industrial engineers are employed in and apply their skills in an extremely wide range of organizations, including manufacturing industries, service industries, and governmental agencies.

The complexity of these organizations and the emphasis on increased effectiveness, efficiency, and productivity have led to a growing need for industrial engineering analysis and design, resulting in an increased demand for industrial engineering graduates. This increased demand recognizes the modern industrial engineer's versatility and responsiveness to the challenges of a rapidly changing society. Industrial engineering is one of the nation's largest and most rapidly growing engineering professions.

The industrial engineering program prepares graduates for careers in all phases of industrial engineering and enables them to perform both technical and managerial functions that require scientific and engineering backgrounds. By combining the study of

science, mathematics, engineering fundamentals, design, and management principles, an industrial engineering education provides a unique background and a sound basis for lifelong career development in engineering practice, research, or management.

Senior design projects consist of a real-world application of IE principles by teaming students with a local industry in Indiana. Teams have taken on full-scale projects like designing floor layouts for factories and hospitals, designing operations to improve system efficiency, reducing time and waste in processing, allocating resources to optimize system performance, and developing a safety plan for preventing work-related injuries.

Faculty

<https://engineering.purdue.edu/IE/People/Faculty>

Contact Information

Main Office

School of Industrial Engineering
Purdue University
315 N. Grant Street
West Lafayette, IN 47907-2023
Phone: +1 (765) 494-5400
Fax: +1 (765) 494-6802

Graduate Information

For Graduate Information please see Industrial Engineering Graduate Program Information.

Baccalaureate

Industrial Engineering, BSIE

About the Program

The Industrial Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Industrial engineers design, analyze, and manage complex human-integrated systems such as manufacturing systems, supply chain networks, and service systems. These systems typically consist of a combination of people, information, material, and equipment. In such systems industrial engineers determine how to optimize the system for maximum efficiency, effectiveness, throughput, safety, or some other objective of interest to the stakeholders of the system. To achieve these objectives, an industrial engineer draws upon knowledge of mathematics, along with physical, engineering, management, and behavioral sciences to function as a problem-solver, innovator, designer, coordinator, and system integrator. Industrial engineers are employed in and apply their skills in an extremely wide range of organizations, including manufacturing industries, service industries, and governmental agencies.

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graduates. This increased demand recognizes the modern industrial engineer's versatility and responsiveness to the challenges of a rapidly changing society. Industrial engineering is one of the nation's largest and most rapidly growing engineering professions.

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Senior design projects consist of a real-world application of IE principles by teaming students with a local industry in Indiana. Teams have taken on full-scale projects like designing floor layouts for factories and hospitals, designing operations to improve system efficiency, reducing time and waste in processing, allocating resources to optimize system performance, and developing a safety plan for preventing work-related injuries.

Degree Requirements

123 Credits Required

Industrial Engineering Major Requirements (51 credits)

Required IE Courses (36 credits)

- IE 20000 - Industrial Engineering Seminar
- IE 23000 - Probability And Statistics In Engineering I
- IE 33000 - Probability And Statistics In Engineering II
- IE 33200 - Computing In Industrial Engineering
- IE 33500 - Operations Research - Optimization
- IE 33600 - Operations Research - Stochastic Models
- IE 34300 - Engineering Economics
- IE 37000 - Manufacturing Processes I
- IE 38300 - Integrated Production Systems I
- IE 38600 - Work Analysis And Design I
- IE 43100 - Industrial Engineering Design
- IE 47400 - Industrial Control Systems
- IE 48600 - Work Analysis And Design II

IE Technical Electives (15 credits)

Basic requirements:

6 credits required in IE courses.

9 credits required from approved list of courses to bring total to 15 credits.

- IE 48400 - Integrated Production Systems II
Select one of the options
Option 1:
and

- IE 47000 - Manufacturing Processes II

Option 2:

- IE 47000 - Manufacturing Processes II or
- IE 48400 - Integrated Production Systems II AND
- Approved course offered within the School of Industrial Engineering (either at senior-undergraduate or 50000-level) - Credit Hours: 3.00

Select 9 cr. of coursework from approved Technical Elective list (attached: technical elective program and approved technical elective courses).

- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00

Other Departmental/Program Course Requirements (48-50 credits)

Mathematics Requirements (18 - 20 credits)

*Satisfies a University Core Requirement

- MA 16500 - Analytic Geometry And Calculus I * (satisfies FYE requirement) (Satisfies Quantitative Reasoning for Core) or
- MA 16100 - Plane Analytic Geometry And Calculus I * (satisfies FYE requirement)
- MA 16600 - Analytic Geometry And Calculus II * (satisfies FYE requirement) or
- MA 16200 - Plane Analytic Geometry And Calculus II * (satisfies FYE requirement)
- MA 26100 - Multivariate Calculus *
- MA 26500 - Linear Algebra *
- MA 26600 - Ordinary Differential Equations *

Science Requirements (11 credits)

- PHYS 17200 - Modern Mechanics * (satisfies FYE requirement) (Satisfies Science for core)
- PHYS 24100 - Electricity And Optics *
- CHM 11500 - General Chemistry * (satisfies FYE requirement) (Satisfies Science for core)

General Engineering Requirements (19 credits)

- ENGR 13100 - Transforming Ideas To Innovation I * (satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II (satisfies FYE requirement)
- ME 27000 - Basic Mechanics I
- ME 20000 - Thermodynamics I
- NUCL 27300 - Mechanics Of Materials
- ECE 20100 - Linear Circuit Analysis I
- CS 15900 - Programming Applications For Engineers (satisfies FYE requirement)

General Education Elective Requirements (24 credits)

Foundational Core

(<http://www.purdue.edu/provost/initiatives/curriculum/course.html>)

- (satisfies Information Literacy selective for core; ENGL 10600/SCLA 10100 /ENGL 10800) - Credit Hours: 3.00
- (satisfies Written Communication selective for core; ENGL 10600/SCLA 10100 /ENGL 10800) - Credit Hours: 3.00
- (satisfies Oral Communication selective for core; SCLA 10200 /COM 11400) - Credit Hours: 3.00
- (satisfies Human Cultures: Humanities selective for core) - Credit Hours: 3.00
- (satisfies Human Cultures: Behavioral/Social Science selective for core) - Credit Hours: 3.00
- (satisfies Science, Technology, and Society selective for core) - Credit Hours: 3.00

IE General Education Electives

Industrial Engineering General Education Requirements

- General Education Elective I - Credit Hours: 3.00 - 4.00 (Satisfies Information Literacy and Written Communication for core)
- General Education Elective II - Credit Hours: 3.00 (Satisfies Oral communication for core)
- General Education Elective III - Credit Hours: 3.00
- General Education Elective IV - Credit Hours: 3.00 (Satisfies Humanities for core)
- General Education Elective V - Credit Hours: 3.00 (Satisfies Behavioral/Social Science for core)
- General Education Elective VI - Credit Hours: 3.00 (Satisfies Science, Tech & Society for core)
- General Education Elective VII - Credit Hours: 3.00
- General Education Elective VIII - Credit Hours: 3.00

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 Requirements

[Click here for Industrial Engineering Technical Electives](#)

Program Requirements

Fall 1st Year

- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- General Education Elective I - Credit Hours: 3.00 - 4.00

13-14 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- CS 15900 - Programming Applications For Engineers
- PHYS 17200 - Modern Mechanics
- ENGR 13200 - Transforming Ideas To Innovation II
- General Education Elective II - Credit Hours: 3.00

16 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- ME 27000 - Basic Mechanics I
- IE 20000 - Industrial Engineering Seminar
- IE 23000 - Probability And Statistics In Engineering I
- IE 34300 - Engineering Economics
- General Elective III - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- MA 26500 - Linear Algebra
- NUCL 27300 - Mechanics Of Materials
- PHYS 24100 - Electricity And Optics
- IE 33000 - Probability And Statistics In Engineering II
- General Elective IV - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 26600 - Ordinary Differential Equations
- ECE 20100 - Linear Circuit Analysis I
- IE 33200 - Computing In Industrial Engineering
- IE 33500 - Operations Research - Optimization
- IE 37000 - Manufacturing Processes I
- General Elective V - Credit Hours: 3.00

18 Credits

Spring 3rd Year

- IE 33600 - Operations Research - Stochastic Models
- ME 20000 - Thermodynamics I
- IE 38300 - Integrated Production Systems I
- IE 38600 - Work Analysis And Design I
- General Elective VI - Credit Hours: 3.00

15 Credits

Fall 4th Year

- IE 47400 - Industrial Control Systems
- IE 48600 - Work Analysis And Design II
- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- General Elective VII - Credit Hours: 3.00

15 Credits

Spring 4th Year

- IE 43100 - Industrial Engineering Design
- IE Technical Elective I - Credit Hours: 3.00
- IE Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- General Elective VIII - Credit Hours: 3.00

15 Credits

Notes

*Satisfies a University Core Requirement

2.0 Graduation GPA required for Bachelor of Engineering 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

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Minor

Manufacturing Minor

A minor in Manufacturing is available to students in the College of Engineering and School of Technology.

Requirements for the Minor (18 credits)

Core Courses (9 credits)

- MSE 23000 - Structure And Properties Of Materials
- MFET 30000 - Applications Of Automation In Manufacturing

- IE 37000 - Manufacturing Processes I or
- ME 36300 - Principles And Practices Of Manufacturing Processes

Elective Courses (9 credits)

Manufacturing Processes, Systems and Planning

- ABE 50100 - Welding Engineering
- IE 47000 - Manufacturing Processes II
- ME 55700 - Design For Manufacturability
- MFET 44600 - Advanced Manufacturing Operations

Automated Manufacturing and Integration

- IE 57400 - Industrial Robotics And Flexible Assembly
- ME 57600 - Computer Control Of Manufacturing Processes
- MET 28400 - Introduction To Industrial Controls
- MFET 34800 - Advanced Industrial Robotics
- MFET 37400 - Manufacturing Integration I

Advanced Manufacturing

- ME 50700 - Laser Processing
- MET 44600 - Micro And Nano Manufacturing
- MET 49000 - Special Topics In MET

Computer-Aided Design in Manufacturing

- ME 44400 - Computer-Aided Design And Prototyping
- MFET 34200 - Advanced Manufacturing Processes And Practices

Quality Control

- IE 53000 - Quality Control
- MET 45100 - Manufacturing Quality Control

Notes

- Must receive a grade of "C" or better in all of the courses to fulfill the minor.
- Generally, all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus to be eligible for the Manufacturing Minor.
- The only exceptions to this rule are as follows: (1.) One equivalent transfer course from another university can be used if it is a core course and comes from an ABET-accredited program, OR (2.) One equivalent Purdue substitution may be used if it is deemed equivalent to the prescribed minor course and acceptable by the home School of the student. (No more than one substitution from either of the above two categories is acceptable to be eligible for the Manufacturing Minor.)

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School of Materials Engineering

An Overview

Materials Engineering

Materials have enabled improvement in the products humans use since the beginning of recorded history. For example without the development of high purity silicon most of today's electronic devices would not exist. New low density, high stiffness composite materials have replaced metals and wood in tennis racquets. The performance of these materials stems from their properties which depend on their microscopic structure, also known as microstructure. Microstructure in turn depends upon materials processing, the fabrication of materials into functional shapes. Materials Engineering is the study of the interrelationships between processing, structure, properties and performance of materials.

Materials engineers study the structure and composition of materials on scales ranging from the electronic and atomic through the microscopic to the macroscopic. They develop new materials, improve traditional materials and are key people in the manufacturing process to produce materials reliably and economically. They seek to understand phenomena and to measure materials properties of all kinds, and they predict and evaluate the performance of real materials as structural or functional elements in engineering systems. Employment opportunities span all types of industry, such as aerospace, automotive, chemical, electronic, energy and primary material-producing companies.

Faculty

<https://engineering.purdue.edu/MSE/People/ptFaculty>

Contact Information

School of Materials Engineering

Neil Armstrong Hall of Engineering

701 West Stadium Avenue

West Lafayette, IN 47907-2045

Telephone: (765) 494-4100

FAX: (765) 494-1204

E-mail regarding academic programs: vicline@purdue.edu

Graduate Information

For Graduate Information please see [Materials Engineering Graduate Program Information](#).

Baccalaureate

Materials Engineering, BSMSE

About the Program

The Materials Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Materials Engineering's academic programs have been developed around broad and basic phenomena, applied to all major classes of artificial materials—ceramics, metals, glasses, polymers, and semiconductors. The undergraduate and graduate programs integrate our faculty strengths across the field's four cornerstones: structure, properties, processing, and performance.

The first three years of study provide the basic educational core. In addition to the broad range of basic sciences and general education courses, the core provides a generic approach to the elements of the field. The core exploits the idea that the field is composed of the key elements of the field: synthesis/processing, composition/structure, properties and performance. This concept provides the foundation across all the materials classes: ceramics, metals, polymers, etc. The senior year, consisting of primarily electives, allows students the opportunity to focus their program toward personal goals in the field.

Degree Requirements

125 Credits Required

Materials Engineering Major Courses (45 credits)

Required MSE Courses (45 credits)

- MSE 23000 - Structure And Properties Of Materials
- MSE 33000 - Processing And Properties Of Materials
- MSE 33500 - Materials Characterization Laboratory
- MSE 34000 - Transport Phenomena
- MSE 36700 - Materials Processing Laboratory
- MSE 37000 - Electrical, Optical, And Magnetic Properties Of Materials
- MSE 38200 - Mechanical Response Of Materials
- MSE 39000 - Materials Engineering Seminar (taken each semester)
- MSE 42000 - Structure And Properties Of Organic Materials
- MSE 43000 - Materials Processing And Design I
- MSE 44000 - Materials Processing And Design II
- MSE 44500 - Materials Engineering Systems Analysis And Design

MSE 2nd year courses:

- MSE 23500 - Materials Properties Laboratory
- MSE 25000 - Physical Properties In Engineering Systems
- MSE 26000 - Thermodynamics Of Materials
- MSE 27000 - Atomistic Materials Science

MSE technical Electives - (18 credits)

Materials Science Engineering Technical Electives

- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- Technical Elective IV - Credit Hours: 3.00
- Technical Elective V or Support Area Elective I - Credit Hours: 3.00
- Technical Elective VI or Support Area Elective II - Credit Hours: 3.00

Other Departmental/Program Course Requirements (62 credits)

General Engineering Requirements (4 credits)

- ENGR 13100 - Transforming Ideas To Innovation I or
- ENGR 14100 - Honors Creativity And Innovation In Engineering Design I

- ENGR 13200 - Transforming Ideas To Innovation II or
- ENGR 14200 - Honors Creativity And Innovation In Engineering Design II

Mathematics Requirements (18 credits)

Alternative sequence to MA 26500/26600 is MA 26200 followed by either MA 30300 or MA 35100.

- MA 26100 - Multivariate Calculus
- MA 26500 - Linear Algebra
- MA 26600 - Ordinary Differential Equations

- MA 16500 - Analytic Geometry And Calculus I (Satisfies Quantitative Reasoning Selective for core) or
- MA 16100 - Plane Analytic Geometry And Calculus I (Satisfies Quantitative Reasoning Selective for core)

- MA 16600 - Analytic Geometry And Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II

Science Requirements (16 credits)

PHYS 25200 may be replaced by another 1-credit hour science laboratory as listed in the MSE undergraduate manual

PHYS 27200 replaces both PHYS 24100 and PHYS 25200

- PHYS 17200 - Modern Mechanics (satisfies Science Selective for core)

- CHM 11500 - General Chemistry (satisfies Science Selective for core) or
- CHM 13500 - General Chemistry Honors

- CHM 11600 - General Chemistry or
- CHM 13600 - General Chemistry Honors

- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and
- PHYS 25200 - Electricity And Optics Laboratory

MSE General Education Requirement (24 Credits)

- Written Communication Foundational Outcome Course - Credit Hours: 3.00 - 4.00 (satisfies Written Communication and Information Literacy Selectives for core)
- Oral Communication Foundational Outcome Course - Credit Hours: 3.00

[Click here for Materials Science General Education Supplemental Information](#)

Foundation Core

- G.E. I (satisfies Human Cultures Humanities for core) - Credit Hours: 3.00
- G.E. II (satisfies Human Cultures Behavioral/Social Science for core) - Credit Hours: 3.00
- G.E. III (satisfies Science, Technology & Society for core) - Credit Hours: 3.00

MSE General Education Electives (see the MSE undergraduate manual for an approved list)

- G.E. IV - Credit Hours: 3.00
- G.E. V - Credit Hours: 3.00

- G.E. VI - Credit Hours: 3.00

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](#).

Program Requirements

Fall 1st Year

- MA 16500 - Analytic Geometry And Calculus I
- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- Written Communication Foundational Outcome Course - Credit Hours: 3.00 - 4.00

13-14 Credits

Spring 1st Year

- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics
- CHM 11600 - General Chemistry
- ENGR 13200 - Transforming Ideas To Innovation II
- Oral Communication Foundational Outcome Course - Credit Hours: 3.00

17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- MA 26500 - Linear Algebra

- MSE 23000 - Structure And Properties Of Materials
- MSE 39000 - Materials Engineering Seminar
- MSE Second Year Course - Credit Hours: 3.00
- MSE Second Year Course - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- MA 26600 - Ordinary Differential Equations
- PHYS 25200 - Electricity And Optics Laboratory
- PHYS 24100 - Electricity And Optics
- MSE 39000 - Materials Engineering Seminar
- General Elective I - Credit Hours: 3.00
- MSE Second Year Course - Credit Hours: 3.00
- MSE Second Year Course - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- MSE 34000 - Transport Phenomena
- MSE 37000 - Electrical, Optical, And Magnetic Properties Of Materials
- MSE 39000 - Materials Engineering Seminar
- MSE 33500 - Materials Characterization Laboratory or
- MSE 36700 - Materials Processing Laboratory
- General Elective II - Credit Hours: 3.00
- General Education Elective III - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- MSE 33000 - Processing And Properties Of Materials
- MSE 38200 - Mechanical Response Of Materials
- MSE 42000 - Structure And Properties Of Organic Materials
- MSE 39000 - Materials Engineering Seminar
- MSE 36700 - Materials Processing Laboratory or
- MSE 33500 - Materials Characterization Laboratory
- Technical Elective I - Credit Hours: 3.00

15 Credits

Fall 4th Year

- MSE 39000 - Materials Engineering Seminar
- MSE 43000 - Materials Processing And Design I
- MSE 44500 - Materials Engineering Systems Analysis And Design
- General Elective IV - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00

15 Credits

Spring 4th Year

- MSE 39000 - Materials Engineering Seminar
- MSE 44000 - Materials Processing And Design II
- Technical Elective IV - Credit Hours: 3.00
- Technical Elective V - Credit Hours: 3.00
- Technical Elective VI - Credit Hours: 3.00
- General Elective V - Credit Hours: 3.00
- General Elective VI - Credit Hours: 3.00

18 Credits

Note

Students must have a graduation index of 2.0 and must have a minimum average GPA of 2.0 in MSE 20000 and 30000 level courses.

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.

Minor

Materials Science and Engineering Minor

A minor in Materials Engineering is available to students with an entering cumulative GPA of 3.2 or better.

Requirements for the Minor (18 credits)

A. Core Requirements (9 credits)

- MSE 23000 - Structure And Properties Of Materials
- MSE 26000 - Thermodynamics Of Materials
- MSE 33000 - Processing And Properties Of Materials

B. Electives - Choose Three (9 credits)

- MSE 27000 - Atomistic Materials Science
- MSE 37000 - Electrical, Optical, And Magnetic Properties Of Materials
- MSE 34000 - Transport Phenomena
- MSE 38200 - Mechanical Response Of Materials
- MSE 42000 - Structure And Properties Of Organic Materials
- MSE 50000 level courses (with Faculty Approval) - Credit Hours: 3.00

The pre- and co-requisites for MSE courses relevant to the minor are

Class	Pre- and Co-requisites
MSE 23000	Pre: CHM 11500, MA 16500
MSE 26000	Pre: CHM 11500, MA 16500 Co: MSE 23000
MSE 27000	Pre: MA 26100 Co: MSE 23000, MA 26500
MSE 33000	Pre: MSE 23000, MSE 26000
MSE 34000	Pre: MA 26600
MSE 37000	Pre: MSE 23000, MSE 27000, PHYS 24100
MSE 38200	Pre: MA 26500 and Statics/Dynamics Course
MSE 5xx00	Pre: MSE 23000 and Consent of Instructor ²

Notes

- No laboratory classes can fulfill the MSE minor requirements. This includes MSE 23500, MSE 33500, MSE 36700, MSE 43000, MSE 44000, and MSE 49900.
- Up to two MSE 5xx level courses can be taken to fulfill the 18 credit hours required.
- If student is ME, NE, or ChE, then MSE 34000 is not allowed and the 9 credits must be selected from rest of elective list.
- A grade of "C" (not "C-") or better in all of the courses taken toward the MSE minor is required.
- Generally, all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus.

- ¹ NUCL 32000 and CE 23100 are also acceptable.
- ² Prerequisites for MSE 5xx00 courses will vary by course.

Disclaimer

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School of Mechanical Engineering

An Overview

Mechanical Engineering comprises a wide range of activities that include researching, designing, developing, manufacturing, managing and controlling engineering systems and their components. The many industrial sectors to which mechanical engineers make substantial contributions include:

- aerospace/defense,
- automotive,
- biotechnology/pharmaceutical,
- chemical/petroleum,
- computers/electronics,
- construction,
- consumer/food products,
- energy/nuclear,
- heavy/off-road equipment,
- engineering consulting,
- thermal systems,
- graduate education, among others.

Beyond these traditional roles, mechanical engineers are increasingly pursuing a number of non-traditional career paths including:

- business/financial services,
- dentistry,
- education,
- engineering and public policy,
- law (patent law and intellectual property), and
- medicine/healthcare (prosthetics, surgical robotics and instruments, human motion kinetics, etc.).

As such, mechanical engineering is the broadest of all of the engineering disciplines and provides the widest range of career opportunities. Graduates of the School of Mechanical Engineering have gone on to become CEOs, entrepreneurs, chief engineers, business analysts, astronauts, faculty, physicians, dentists, patent lawyers and public policy leaders, and entrepreneurs.

Faculty

Students interested in pursuing undergraduate research opportunities in the School of Mechanical Engineering are encouraged to contact faculty who conduct research in their chosen area of interest. A comprehensive list of Mechanical Engineering faculty along with a brief resume for each is provided at the link listed below.

<https://engineering.purdue.edu/ME/People/index.html>

Contact Information

Questions concerning any aspect of the School of Mechanical Engineering can be directed to any of the following offices.

Undergraduate Office

School of Mechanical Engineering

Purdue University
585 Purdue Mall
West Lafayette, IN 47907-2088
Phone: (765) 494-5689
Fax: (765) 494-0051

meugoff@ecn.purdue.edu

Graduate Office

megradoffice@purdue.edu and megradapps@purdue.edu

Development Office

mealumni@purdue.edu

Administration

mehead@ecn.purdue.edu

Graduate Information

For Graduate Information please see [Mechanical Engineering Graduate Program Information](#).

Baccalaureate

Mechanical Engineering, BSME

About the Program

The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Program Educational Objectives and Outcomes

The School of Mechanical Engineering offers coursework leading to the Bachelor of Science in Mechanical Engineering (B.S.ME).

The program educational objectives of the School of Mechanical Engineering are to matriculate graduates who conduct themselves in a responsible, professional and ethical manner (citizenship), and who upon the years following graduation, are committed to:

1. Discovery

- Actively embracing leadership roles in the practice of engineering in industry and government organizations (including both traditional and emerging technical areas).

- Conducting research and development across disciplines (via graduate study or industry) to advance technology and foster innovation in order to compete successfully in the global economy.
- Applying their engineering problem-solving skills to less-traditional career paths (e.g., law, medicine, business, education, start-up ventures, public policy, etc.).

2. Learning

- Actively participating in ongoing professional development opportunities (conferences, workshops, short courses, graduate education, etc.).
- Updating and adapting their core knowledge and abilities to compete in the ever-changing global enterprise.
- Developing new knowledge and skills to pursue new career opportunities.

3. Engagement

- Serving as ambassadors for the engineering profession, inspiring others to develop a passion for engineering.
- Exchanging and applying knowledge to create new opportunities that advance society and solve a variety of technical and social problems.
- Advancing entrepreneurial ventures and fostering activities that support sustainable economic development to enhance the quality of life of people in the state, across the country and around the world.

In order for students to achieve these objectives, the program of study should satisfy the comprehensive set of program outcomes categorized in three areas: engineering foundational skills, professional skills, and emerging skills.

Engineering Foundational Skills

The program should provide students with a solid technical foundation for their careers. This foundation should include:

- Engineering fundamentals.
- Analytical skills.
- Experimental skills.
- Modern engineering tools.
- Design skills.
- Impact of engineering solutions.

Professional Skills

The program should prepare students to be effective engineers in the professional workplace. To this end, students should develop the following professional skills:

- Communication skills.
- Teamwork skills.
- Professional and ethical responsibility.
- Contemporary issues.
- Lifelong learning.

Emerging Skills

The program should assist students in fostering a number of other emerging skills that are becoming increasingly critical to the success of future engineers. These emerging skills include:

- Leadership.
- Global engineering skills.
- Innovation.
- Entrepreneurship.

Mechanical Engineering Program Description

To achieve the above stated objectives and outcomes, the School of Mechanical Engineering has developed a comprehensive, integrated curriculum to provide students with a broad base on which to build an engineering career. It is founded on basic sciences, including physics, chemistry and mathematics; computer science and computer graphics; and oral and written communications skills.

To this foundation, a core of engineering science and design courses are added in three main curriculum stems: mechanical sciences (statics, dynamics, mechanics of materials, and structures and properties of materials), information technologies (electric circuits and electronics, instrumentation, system modeling and controls), and thermal-fluid sciences (thermodynamics, fluid mechanics and heat transfer).

Throughout the core curriculum, students gain extensive laboratory and computer experience via modern facilities in all basic areas of the discipline. In addition, the curriculum provides an integrated innovation, design and entrepreneurship experience. This experience - which begins with a sophomore-level cornerstone course and culminates with a senior-level capstone course - emphasizes innovation, problem-solving, leadership, teamwork, communication skills, practical hands-on experience with various product design processes and entrepreneurship. Students then specialize by selecting two restricted electives that provide additional depth in two of the three main stems of the curriculum. Students can further specialize with 12 credit hours of technical/professional electives in engineering, mathematics, natural sciences, select management courses or individualized project courses (ME 49700).

Just as design experiences are integrated throughout the mechanical engineering curriculum, so too are opportunities to communicate technical information, both orally and in writing. Students experience a variety of communications opportunities in progressing through the mechanical engineering program.

As a freshman, each student is required to take both oral and written communication courses. These courses lay the foundation for future oral and written communications. In the sophomore seminar course (ME 29000), students learn how to create professional documents and correspondence (e.g., resumes, letters, memos, etc.), develop personal interview skills, learn the basics of Web publishing and develop a global engineering professional profile. In ME 26300, the cornerstone design course, student teams prepare formal design reports, give oral presentations and maintain individual design notebooks. The communications experiences culminate in the capstone design course (ME 46300), in which student teams prepare presentations and reports for the sponsors of their selected design projects and compete in an innovation competition.

A major feature of the curriculum is the flexible 39-credit-hour elective program, of which 24 credit hours are taken during the senior year. This allows for a program with considerable breadth while also permitting the depth and specialization in an area of the student's professional interests.

Because of the wide scope of activities in which the mechanical engineer is engaged and because of the broad spectrum of student interests, mechanical engineering graduates may choose either to enter the profession immediately after receiving their bachelor's degree or go directly to graduate school. In either case, the curriculum provides a firm foundation for continuing education and fosters a commitment to lifelong learning, whether it is as a member of the engineering profession, through formal graduate work or through independent study.

Visit the School of Mechanical Engineering website for more current information about the undergraduate programs.

Scholarships

The School of Mechanical Engineering sponsors a broad array of need-based and merit-based scholarships. Eligible candidates (incoming sophomores through senior mechanical engineering students) are invited in mid-spring to submit applications for consideration. To qualify, students are required to have a scholastic index of 2.8 or better on a 4.0 scale. Awards range from \$500 to \$10,000 and total more than \$1 million. This scholarship money is in addition to the University's Trustees and Presidential scholarships in Mechanical Engineering, which, when fully funded, will include more than 300 awards worth a total of more than \$2 million.

Professional Student Organizations and Activities

Student organizations provide valuable opportunities for students to enhance organizational, communication, teamwork and leadership skills. Students also are strongly encouraged to become involved in one or more extracurricular activities. Student

organizations specific to mechanical engineering include the American Society of Mechanical Engineers (ASME), the Purdue Mechanical Engineering Ambassadors (PMEA), Pi Tau Sigma (the Mechanical Engineering Honor Society) and the Society of Automotive Engineers (SAE).

Professional Practice Program with Industry or Governmental Organizations

The professional practice programs enable qualified students to obtain experiences related to their specific engineering discipline with selected employers while completing the requirements of their undergraduate degree. Students can participate in a five-session co-op, a three-session co-op or an internship program. International internships also are available through the Global Partners in Apprenticeship Learning (G-PAL) Program within the Office Professional Practice (OPP). OPP also offers the GEARE program, which combines domestic and international work experiences, a design project component and an opportunity to study abroad.

For more information, visit the Office of Professional Practice website.

Honors Program

An honors program is available for outstanding mechanical engineering undergraduate students. The honors program is a mechanism for:

- Participating in small enrollment, targeted courses.
- Participating in a directed project in their area of interest.
- Stimulating interest in graduate study and research/academic careers.
- Developing a community of honors scholars.
- Allowing for special recognition of high levels of academic achievement.

The Honors program utilizes the technical, general education and elective requirements for the B.S.ME degree in a way that is consistent with the honors designation. Admission to the Honors program is automatic for any student meeting the admission requirements for the First-Year Engineering Honors program. Students not in the First-Year Engineering Honors program can apply for admission into the Honors program by completing an honors application and meeting the required cumulative GPA for admission.

Completion of the Honors program requires earning a required minimum number of honor points (credit hours) earned in one of the following manners:

- Take honors courses (including the sophomore and junior honors seminar sequence).
- Complete honors experiences (e.g., study abroad, special work experiences, etc.).
- Take honors strategic initiative courses (defined by the College of Engineering).

Successful completion of the minimum number of honors points will earn a student a certificate and his/her transcript will read, "Bachelor of Science Mechanical Engineering - Honors Program Awarded at West Lafayette."

More details on the Honors program can be found on the ME website.

Study Abroad

Global competency skills are a major focus in the School of Mechanical Engineering. By graduation, roughly 30 percent of ME graduates have international experience (as compared to about 3 percent nationally in engineering). The School of Mechanical Engineering has developed an extensive and multi-faceted study abroad program that ranges from an extensive eight-month experience abroad to a three-week stint abroad. This staged program allows students to pick and choose the program that best fits their requirements and timing. A brief summary of these programs are provided below. Additional information can be found on the ME Global Programs website.

GEARE Program. The Global Engineering Alliance for Research and Education (GEARE) program is the flagship international program. The GEARE program involves an eight-month experience abroad that includes both a domestic and international

internship, a semester of study abroad with fully transferable engineering course credits (all taught in English) and a one-semester to two semester design team project with students from the international partner institution.

ETA Program. The Engineering Term Abroad (ETA) program is a one-semester study abroad at a partner institution and includes fully transferable engineering course credits (all taught in English). This enables participating students to continue with their engineering subjects and thus stay on track for graduation while still gaining international experience. Current partner institutions exist in Australia, China, England, France, Germany, India, New Zealand, Singapore, Spain and Turkey, among other locations and is our most popular international program.

RTA Program. The Research Term Abroad (RTA) program is designed to enable interested students to conduct undergraduate engineering research at a partner institution. Currently our primary partners are Hannover University and Clausthal University of Technology in Germany.

G-PAL Program. The Global Partners in Apprenticeship (G-PAL) program offers a pair of concurrent international internship positions, one for a student from the target international partner country and one for a student from the U.S. Preferably both students will be housed at the international student's home for the duration of the assignment abroad. The G-PAL students can also come from two different academic disciplines. Internships are typically three months to six months in duration.

MTA. Special Summer Module 1 Term Abroad (MTA) programs are available to select locations and provide students with a short three-week stint in a foreign country. Brief stints like this enable students to test the waters to see if they would be interested in a more protracted time abroad. As such, this program compliments other existing programs and provides a vehicle for students experience going abroad without a long-term commitment. Currently, the summer program involves international experiences in China.

Registration for the Fundamentals of Engineering Examination

Mechanical engineering seniors are strongly encouraged to take the first step to becoming registered professional engineers (PEs) by registering and successfully completing the Fundamentals of Engineering (FE) examination, also called the Engineer in Training (EIT) exam. Seniors can register to take the FE exam at the West Lafayette campus in their senior year prior to graduation. Announcements appear periodically throughout the semester to alert students to this opportunity. The FE exam can be taken daily at Purdue in the months of January/February, April/May, July/August, and October/November. To aid seniors in their preparation for the exam, Chi Epsilon, the Civil Engineering Honor Society organizes annual faculty-taught review sessions on key topics covered on the FE exam. Also, a simple internet search of FE Review Sessions can provide valuable review information available at a student's convenience. Typically, 50 to 75 percent of graduating mechanical engineering seniors register to take the FE exam, and 98 to 100 percent pass the exam on the first attempt.

After passing the FE exam and completing four years of engineering experience after graduation, an engineer is typically eligible to take the professional engineering (PE) licensing examination. Specific information about the EIT exam is available on the School of Mechanical Engineering home page. Questions about the FE Exam or the process to become a registered professional engineer should be directed to the Associate Head of the School of Mechanical Engineering.

Undergraduate Research Opportunities

In addition to the traditional classroom experience, students in the School of Mechanical Engineering have the opportunity to conduct cutting-edge research in one of the thirteen ME Research Areas listed below:

- Acoustics and Noise Control
- Bioengineering
- Combustion
- Design
- Fluid Mechanics and Propulsion
- Heat Transfer

- Heating, Ventilation, Air Conditioning and Refrigeration
- Manufacturing and Materials Processing
- Mechanics and Vibrations
- Nanotechnology
- Robotics
- Solid Mechanics
- Systems, Measurement and Control

Students discover first-hand how research contributes to the advancement of human knowledge. They experience a change of pace from formal classroom activities and gain valuable hands-on skills applicable to both research and non-research careers. In addition, students develop their knowledge of the research process and tools used by professional researchers and increase their proficiencies in technical communication. Such experiences help students connect their summer experience with their future goals, with particular focus on post-graduate education.

Interested students are strongly encouraged to consider participation in the Summer Undergraduate Research Fellowship (SURF) Program or the Discovery Park Undergraduate Research Internship (DURI) Program. To find Purdue faculty who are active in these areas, please visit the Indiana Database of University Research Expertise (INDURE). Use the advanced search to filter results by keyword, area, grants, etc.

Preparation for Graduate Study

The School of Mechanical Engineering also offers graduate work leading to the degrees of Master of Science (M.S.), for students with non-engineering degrees; Master of Science in Engineering (M.S.E), for students with non-mechanical engineering degrees; Master of Science in mechanical engineering (M.S.ME), for students with B.S.ME degrees; and the Doctor of Philosophy (Ph.D.).

The regular undergraduate curriculum (and the honors undergraduate program) provide a strong foundation for graduate study, and students who complete either of the programs with appropriate academic records are encouraged to pursue graduate work. Many graduates have continued their education by pursuing advanced studies in engineering, business, law, medicine, dentistry and public policy.

For answers to your questions about graduate study, visit the Mechanical Engineering Graduate Office in the Mechanical Engineering Building, Room 1003, call 765-494-5730, email megrad@ecn.purdue.edu or visit the ME website.

Combined B.S.ME/M.S.ME Program

A combined B.S.ME/M.S.ME program is available for outstanding mechanical engineering undergraduate students. This program is anticipated to take approximately five years to complete (with the M.S.ME non-thesis option) and result in receiving both the B.S.ME and M.S.ME degrees.

The B.S.ME/M.S.ME program is a mechanism for:

- Providing a seamless transition from the B.S.ME to the M.S.ME program.
- Participating in a directed project in their area of interest.
- Stimulating interest in graduate study and research/academic careers.
- Allowing for special recognition of high levels of academic achievement.

The B.S.ME/M.S.ME program requires students to take 12 hours of graduate coursework toward their B.S.ME professional elective requirement. This same 12 hours likewise count toward the M.S.ME degree.

Interested students typically apply as an "internal ME applicant" in the second half of their junior year after completion of 81 hours of coursework in the undergraduate program with a cumulative undergraduate GPA of 3.2 or higher. If a GPA of 3.0 has been maintained and grades of "B" or better are received in the first two graduate courses (typically in the seventh semester), the student will be asked to formally apply to the Purdue Graduate School at the beginning of his or her eighth semester of the senior year.

Complete details of the combined B.S.ME/M.S.ME program can be found on the Web. Questions about this information should be directed to Julayne Moser, email: moser@purdue.edu.

B.S.ME/M.B.A. 5-Year Program

The School of Mechanical Engineering in conjunction with the Krannert School of Management offers an integrated five-year B.S.ME/M.B.A. program to high-achieving students. Each year a significant number of engineering graduates pursue M.B.A.s at U.S. business schools. The M.B.A. is seen as a complement to the engineer's technical education, providing an understanding of the business context within which many technical decisions are made. Many employers also have a strong preference for hiring M.B.A.s with engineering backgrounds, particularly in the manufacturing and technology sectors, in which Krannert and the College of Engineering enjoy many longstanding relationships with leading employers. The B.S.ME/M.B.A. combined degree offering will provide top B.S.ME students an efficient and cost-effective path for developing management knowledge as well as the highly valued credential of an M.B.A. degree. It will also open new job opportunities for the program graduates that expedite their progression to high-level management positions.

Basic admission requirements include:

1. Maintaining a 3.5 graduation GPA.
2. Securing at least one session of internship and/or co-op work experience prior to the senior year.
3. Securing advanced credit (preferably math) or willingness to accelerate your ME program by taking summer courses.
4. Completing an application and successfully interviewing for a position with the Krannert School of Management faculty.

More details about the B.S.ME/M.B.A. program are available online.

Degree Requirements

128 Credits Required

Mechanical Engineering Major Courses (43 credits)

All ME courses are critical courses.

- ME 20000 - Thermodynamics I
- ME 27000 - Basic Mechanics I
- ME 26300 - Introduction To Mechanical Engineering Design, Innovation And Entrepreneurship
- ME 27400 - Basic Mechanics II
- ME 29000 - Global Engineering Professional Seminar
- ME 30900 - Fluid Mechanics 2 of 3 required - Satisfies Restricted Selective requirements
- ME 31500 - Heat And Mass Transfer
- ME 32300 - Mechanics Of Materials
- ME 35200 - Machine Design I
- ME 36500 - Measurement And Control Systems I
- ME 37500 - Measurement And Control Systems II
- ME 46300 - Engineering Design

- ME 30000 - Thermodynamics II or
- ME 45200 - Machine Design II or
- ME 47500 - Automatic Control Systems

ME Technical Electives (12 credits)

- Mechanical Engineering Technology Electives, World & Cultural Affairs Elective
- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- Technical Elective IV - Credit Hours: 3.00

First-Year Engineering Course Requirements (29-30 credits)

- CHM 11500 - General Chemistry (satisfies Science #1 for core)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies Information Literacy for core)
- ENGR 13200 - Transforming Ideas To Innovation II
- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core)
- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics (satisfies Science #2 for core)

- COM 11400 - Fundamentals Of Speech Communication (satisfies Oral Communication for core) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World (satisfies Oral Communication for core)

- ENGL 10600 - First-Year Composition (satisfies Written Communication for core) or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity (satisfies Written Communication for core)

Science Selective

Select one from list (all options accepted).

- BIOL 11000 - Fundamentals Of Biology I
- CHM 11600 - General Chemistry
- CS 15900 - Programming Applications For Engineers

Other School/Department Course Requirements (23 credits)

- CGT 16300 - Graphical Communication And Spatial Analysis (Not included in ME Core GPA)
- ECE 20100 - Linear Circuit Analysis I
- ECE 20700 - Electronic Measurement Techniques
- MA 26100 - Multivariate Calculus
- MA 26200 - Linear Algebra And Differential Equations
- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences
- MSE 23000 - Structure And Properties Of Materials
- PHYS 24100 - Electricity And Optics

General Education Electives (18 credits)

- Mechanical Engineering General Education Supplemental Electives
- Mechanical Engineering Technology Electives, World & Cultural Affairs Elective
- Econ Sel. (B/SS) - Credit Hours: 3.00
- WAC (*Hum*) - Credit Hours: 3.00
- G.E.-I - Credit Hours: 3.00
- G.E.-II - Credit Hours: 3.00
- G.E.-III - Credit Hours: 3.00
- G.E.-IV - Credit Hours: 3.00

Elective (3 credits)

- The primary exceptions that are not permitted for the elective are remedial courses and courses not intended for technical majors.

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](#).

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16500 - Analytic Geometry And Calculus I

- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity

- General Education Sel. I - Credit Hours: 3.00

17 Credits

Spring 1st Year

- ENGR 13200 - Transforming Ideas To Innovation II
- MA 16600 - Analytic Geometry And Calculus II
- PHYS 17200 - Modern Mechanics

- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World

- Science Selective - Credit Hours: 3.00-4.00

16-17 Credits

Fall 2nd Year

- CGT 16300 - Graphical Communication And Spatial Analysis
- MA 26100 - Multivariate Calculus
- ME 27000 - Basic Mechanics I ♦
- ME 29000 - Global Engineering Professional Seminar ♦
- PHYS 24100 - Electricity And Optics
- ME 20000 - Thermodynamics I ♦

16 Credits

Spring 2nd Year

- ECE 20100 - Linear Circuit Analysis I
- ECE 20700 - Electronic Measurement Techniques
- MA 26200 - Linear Algebra And Differential Equations
- ME 26300 - Introduction To Mechanical Engineering Design, Innovation And Entrepreneurship ♦
- ME 27400 - Basic Mechanics II ♦
- Gen Ed Select II - Credit Hours: 3.00

17 Credits

Fall 3rd Year

- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences
- ME 30900 - Fluid Mechanics ♦
- ME 32300 - Mechanics Of Materials ♦
- ME 36500 - Measurement And Control Systems I ♦
- Gen Ed Select III - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- ME 35200 - Machine Design I ♦
- ME 37500 - Measurement And Control Systems II ♦
- MSE 23000 - Structure And Properties Of Materials
- Technical Elective I - Credit Hours: 3.00
- World Affairs and Cultures (Humanities) Elective - Credit Hours: 3.00

16 Credits

Fall 4th Year

- ME 31500 - Heat And Mass Transfer ♦
- Restricted Selective I - Credit Hours: 3.00
- Technical Selective II - Credit Hours: 3.00
- General Education Sel. IV - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- ME 46300 - Engineering Design ♦
- Restricted Selective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- Technical Elective IV - Credit Hours: 3.00
- Econ Elective - Credit Hours: 3.00

15 Credits

Notes

2.0 Graduation GPA required for Bachelor of Science degree

2.0 ME Core 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.

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New Core

Minor

Engineering and Public Policy Minor

A minor in Engineering and Public Policy is available to students in the College of Engineering.

Requirements for the Minor (21 credits)

Required Courses (15 credits)

- CE 35500 - Engineering Environmental Sustainability
- ME 49200 - Technology And Values (Offered alternate spring sems.)
- PHIL 27000 - Biomedical Ethics
- POL 12000 - Introduction To Public Policy And Public Administration
- POL 22300 - Introduction To Environmental Policy

Additonal Courses (6 credits)*

Public Policy (3 credits)

- PHIL 29000 - Environmental Ethics
- POL 32700 - Global Green Politics (recommended)
- POL 42500 - Environmental Law And Politics
- POL 52300 - Environmental Politics And Public Policy

Technical (3 credits)

- ABE 58000 - Process Engineering Of Renewable Resources
- ABE 59100 - Special Topics
- CE 35000 - Introduction To Environmental And Ecological Engineering
- CE 35200 - Biological Principles Of Environmental Engineering
- CE 35300 - Physico-Chemical Principles Of Environmental Engineering
- CE 36100 - Transportation Engineering
- CE 45600 - Wastewater Treatment Processes
- CE 45700 - Air Pollution Control And Design
- CE 52400 - Legal Aspects In Engineering Practice
- ECE 59500 - Selected Topics In Electrical Engineering Physics and Manufacturing of Solar Cells
- ME 49700 - Mechanical Engineering Projects Energy in a Global Context
- ME 59700 - Advanced Mechanical Engineering Projects I Sustainable Energy Options and Analysis

- NUCL 20000 - Introduction to Nuclear Engineering
- ME 59700 - Advanced Mechanical Engineering Projects I Solar Energy
- ME 59700 - Advanced Mechanical Engineering Projects I Bio-energy and Bio-fuels
- ME 59700 - Advanced Mechanical Engineering Projects I Wind Energy and Turbines

Notes

- * All courses must be completed with a grade of "C" or better. A grade of "C- or lower" in any of the minor courses is not adequate.
- Generally all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus to be eligible for the Engineering and Public Policy Minor. The only exceptions to this rule are as follows:
 1. One equivalent transfer course from another university can be used if it is a core course and comes from an ABET-accredited program, OR
 2. One equivalent Purdue substitution may be used if it is deemed equivalent to the prescribed minor course and acceptable by the home School of the student.
- No more than one substitution from either of the above two categories is acceptable for the Engineering and Public Policy Minor.
- **Engineering students** interested in the Public Policy Minor are strongly encouraged to consider pursuing an internship with the **WISE Program** (Washington Internships for Students of Engineering). Go to <http://www.wise-intern.org/> for details or google the Program name. Applications for consideration are typically due at the end of December of each year for the upcoming summer.
- **All students** interested in the Public Policy Minor are strongly encouraged to consider pursuing an internship with the **White House Internship Program**. Go to <https://www.whitehouse.gov/get-involved/internships/> for details. Submission deadline for applications is typically in March of each year for the upcoming summer.
- Students interested in the Engineering and Public Policy Minor are encouraged to become active in the **Purdue Student Pugwash** organization (<http://web.ics.purdue.edu/~pugwash/>). Pugwash is an organization started by Bertrand Russell, Albert Einstein, and several other eminent scientists committed to social responsibility in science and technology.

Disclaimer

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Intellectual Property Law for Engineers Minor

A minor in Intellectual Property Law is available to students in the College of Engineering.

Requirements for the Minor (19 credits)

Required Courses (13 credits)

- ENTR 20000 - Introduction To Entrepreneurship And Innovation
- ME 49200 - Technology And Values
- ME 55400 - Intellectual Property For Engineers
- POL 46000 - Judicial Politics **
- ENGL 42100 - Technical Writing

Elective Courses (6 credits)

Law (3 credits)

- POL 10100 - American Government And Politics
- POL 42800 - The Politics Of Regulation (Recommended)
- POL 46100 - Constitutional Law I (Recommended)
- POL 46200 - Constitutional Law II

Technical (3 credits)

- ECE 38200 - Feedback System Analysis And Design
- ECE 48300 - Digital Control Systems Analysis And Design
- IE 37000 - Manufacturing Processes I
- ME 36300 - Principles And Practices Of Manufacturing Processes
- ME 44400 - Computer-Aided Design And Prototyping
- ME 45200 - Machine Design II
- ME 47500 - Automatic Control Systems
- ME 55300 - Product And Process Design
- ME 55700 - Design For Manufacturability
- ME 56000 - Kinematics
- ME 56100 - Optimal Design: Theory With Practice
- ME 57000 - Machine Design
- ME 57100 - Reliability Based Design
- ME 57200 - Analysis And Design Of Robotic Manipulators
- ME 57500 - Theory And Design Of Control Systems
- ME 57600 - Computer Control Of Manufacturing Processes
- ME 58500 - Instrumentation For Engineering Measurements
- ME 58600 - Microprocessors In Electromechanical Systems
- ME 58800 - Mechatronics - Integrated Design Of Electro-Mechanical Systems

Notes

- Generally, all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus to be eligible for the Intellectual Property Law Minor. The only exceptions to this rule are as follows:
1. One equivalent transfer course from another university can be used if it is a core course and comes from an ABET-accredited program, or
 2. One equivalent Purdue substitution may be used if it is deemed equivalent to the prescribed minor course and acceptable by the home School of the student. Note: No more than one substitution from either of the above two categories is acceptable for the Intellectual Property Law Minor.
- Courses must be completed with a grade of "C" or better. A grade of "C- or lower" is not adequate to fulfill the minor.
 - * Students with knowledge of American Government from high school may seek a waiver of the POL 10100 prerequisite. This exception is not guaranteed, but can be sought from the instructor of POL 46000.
 - **Advising** - Students interested in pursuing a career in a Intellectual Property Law are strongly recommend to contact Mark Janis (BS ChE 1986, Purdue University; Professor of Law and Ira C. Batman Faculty Fellow, Indiana University Maurer School of Law 1989, mdjanis@indiana.edu; <http://www.law.indiana.edu/>) early in their academic program to discuss specific Schools of interest, the applications process, the interview process, and the admission exam (LSATS, etc.)

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.

Sustainable Engineering Minor

Requirements for the Minor (18 credits)

Required Courses (12 credits)

- CE 35500 - Engineering Environmental Sustainability
- EEE 43000 - Industrial Ecology And Life Cycle Analysis
- AGECE 40600 - Natural Resource And Environmental Economics
- POL 32700 - Global Green Politics

Public Policy - Choose One (3 credits)

- PHIL 29000 - Environmental Ethics
- POL 22300 - Introduction To Environmental Policy
- POL 42500 - Environmental Law And Politics
- POL 52300 - Environmental Politics And Public Policy

Technical Courses - Choose One (3 credits)

Sustainable Energy Options

- ABE 58000 - Process Engineering Of Renewable Resources
- ABE 59100 - Special Topics Biomass Feedstock Systems Engineering ^
- CHE 55800 - Rate-Controlled Separation Processes
- CHE 59700 - Special Topics In Chemical Engineering Advanced Solar Energy Conversion ^
- ECE 59500 - Selected Topics In Electrical Engineering Physics and Manufacturing of Solar Cells ^
- ME 59700 - Advanced Mechanical Engineering Projects I Course worth 3 credits each, with the following topics:
- ME 59700 Bio-energy and Bio-fuels ^
- ME 59700 Solar Energy ^
- ME 59700 Sustainable Energy Options and Analysis ^
- ME 59700 Wind Energy and Turbines ^

Sustainable Design and Construction

- AD 39700 - Sustainability In The Built Environment
- BCM 41900 - Sustainable Construction
- ME 55300 - Product And Process Design
- CE 59700 - Civil Engineering Projects Sustainable Building Design Construction and Operation ^

- ME 59700 - Advanced Mechanical Engineering Projects I Sustainable Design and Manufacturing ^

Energy Utilization and Equipment

- ECET 58100 - Workshop In Electrical And Computer Engineering Technology
- ME 44000 - Automotive Prime Movers: Green Engines And Clean Fuel

Agricultural/Environmental Sustainability

- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- CE 59700 - Civil Engineering Projects Water Resources Sustainability ^

Energy Conversion and Storage

- NUCL 47000 - Fuel Cell Engineering
- NUCL 56300 - Direct Energy Conversion
- MSE 59700 - Selected Topics In Materials Engineering Materials and Devices for Solid State Energy Conversion or
- ECE 59500 - Selected Topics In Electrical Engineering Materials and Devices for Solid State Energy Conversion

Notes

- * A grade of "C" or better is required in all of the courses. A grade of "C- or lower" in any of the minor courses is not adequate to fulfill the minor.
 - ^ This is a variable title course.
 - A Sustainable Engineering Minor is available to students in the College of Engineering.
 - Generally, all of the above prescribed minor courses must be taken at the Purdue West Lafayette campus to be eligible for the Sustainable Engineering Minor. The only exceptions to this rule are as follows:
1. One equivalent transfer course from another university can be used if it is a core course and comes from an ABET-accredited program, OR
 2. One equivalent Purdue substitution may be used if it is deemed equivalent to the prescribed minor course and acceptable by the home School of the student.
- No more than one substitution from either of the above two categories is acceptable for the Sustainable Engineering Minor.
 - Finally, as new courses are developed on campus, interested students can request a review by the Undergraduate Chairs Committee of any new courses with substantial engineering sustainability emphasis to be considered as elective options for the minor. Please contact Jim Jones (jonesjd@purdue.edu) in ME to submit your request.

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School of Nuclear Engineering

An Overview

Nuclear engineering is firmly grounded in the understanding and application of modern physics. It has demonstrated vast potential for growth in power generation, medicine, industrial processes, plasmas, space technologies, and national defense.

Nuclear engineers at Purdue contribute to such advanced technologies as fission and fusion power generators, new medical technologies and procedures, improved food safety, advanced materials processing, advanced imaging, and the safe treatment and disposal of spent nuclear fuel.

Indiana's first and only nuclear reactor has its home in Purdue University's Electrical Engineering Building. It headlines field trips for high-school juniors and seniors who participate in demonstrations and experiments. Students in the undergraduate program have an opportunity to work with the reactor in their courses.

Faculty

<https://engineering.purdue.edu/NE/People/faculty.html>

Contact Information

Student Services Office:

School of Nuclear Engineering

Purdue University

400 Central Drive, Room 132G

West Lafayette, IN 47907-2017

Phone: (765) 494-5749

Fax: (765) 494-9570

Email regarding academic programs: nuclss@purdue.edu

General Contact Information:

School of Nuclear Engineering

<https://engineering.purdue.edu/NE>

Purdue University

400 Central Drive, Room 140

West Lafayette, IN 47907-2017

Phone: (765) 494-5739

Fax: (765) 494-9570

Email regarding general information: ne@purdue.edu

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Phone: (765) 494-5739

Fax: (765) 494-9570

Graduate Information

For Graduate Information please see Nuclear Engineering Graduate Program Information.

Baccalaureate

Nuclear Engineering, BSNE

About the Program

The Nuclear Engineering program is accredited by the Engineering Accreditation Commission of ABET

<https://engineering.purdue.edu/NE/academics/undergraduate/pos>

Degree Requirements

125 Credits Required

Nuclear Engineering Major Courses (41 credits)

Required NUCL Courses + NE Technical Electives + Other Departmental/Program Course Requirements = 113 Credit Hours of Nuclear Engineering Major Courses

Required Major Courses (41 credits)

- NUCL 20000 - Introduction to Nuclear Engineering
- NUCL 20500 - Nuclear Engineering Undergraduate Laboratory I
- NUCL 27300 - Mechanics Of Materials
- NUCL 29800 - Sophomore Seminar
- NUCL 30000 - Nuclear Structure And Radiation Interactions
- NUCL 30500 - Nuclear Engineering Undergraduate Laboratory II
- NUCL 31000 - Introduction To Neutron Physics
- NUCL 44900 - Senior Design Proposal
- NUCL 49800 - Senior Seminar
- NUCL 40200 - Engineering Of Nuclear Power Systems
- NUCL 32000 - Introduction To Materials For Nuclear Applications
- NUCL 32500 - Nuclear Materials Laboratory
- NUCL 35000 - Nuclear Thermal-Hydraulics I
- NUCL 35100 - Nuclear Thermal-Hydraulics II
- NUCL 35500 - Nuclear Thermohydraulics Laboratory
- NUCL 39800 - Junior Seminar
- NUCL 45000 - Design In Nuclear Engineering

- NUCL 51000 - Nuclear Reactor Theory I or
- NUCL 42001 - Radiation Interaction With Materials And Applications

Other Departmental/Program Course Requirements (57 credits)

- CHM 11500 - General Chemistry (Satisfies UCC: Science)
- CS 15900 - Programming Applications For Engineers (satisfies FYE requirement)
- ENGR 13100 - Transforming Ideas To Innovation I (satisfies FYE requirement)
- ENGR 13200 - Transforming Ideas To Innovation II (satisfies FYE requirement)
- PHYS 17200 - Modern Mechanics (satisfies FYE requirement)
- MA 26100 - Multivariate Calculus (satisfies Math and physics requirement)
- MA 26500 - Linear Algebra (satisfies Math and physics requirement)
- MA 26600 - Ordinary Differential Equations (satisfies Math and physics requirement)
- PHYS 24100 - Electricity And Optics (satisfies Math and physics requirement) or
- PHYS 27200 - Electric And Magnetic Interactions (satisfies Math and physics requirement)
- ECE 20100 - Linear Circuit Analysis I
- ME 20000 - Thermodynamics I
- ME 27000 - Basic Mechanics I
- ME 27400 - Basic Mechanics II

- MA 16500 - Analytic Geometry And Calculus I (satisfies FYE requirement) or
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies FYE requirement) (satisfies Quant Reasoning for core)

- MA 16600 - Analytic Geometry And Calculus II (satisfies FYE requirement) or
- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies FYE requirement)

- ENGL 10600 - First-Year Composition (satisfies FYE requirement) (satisfies Written Communication and Information Literacy for core) or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity (satisfies FYE requirement) or
- ENGL 10800 - Accelerated First-Year Composition (satisfies FYE requirement) or
- COM 20400 - Critical Perspectives On Communication (satisfies FYE requirement) or
- HONR 19903 - Interdisciplinary Approaches In Writing (satisfies FYE requirement)

- COM 11400 - Fundamentals Of Speech Communication (satisfies FYE requirement) (satisfies Oral Communication for core) or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World (satisfies FYE requirement) or
- COM 21700 - Science Writing And Presentation (satisfies FYE requirement)

- MA Elective - 300 level or above - Credit Hours: 3.00

NE Technical Electives (15 credits)

- Nuclear Engineering Approved Technical Electives
- Technical Elective I - Credit Hours: 3.00
- Technical Elective II - Credit Hours: 3.00
- Technical Elective III - Credit Hours: 3.00
- Technical Elective IV - Credit Hours: 3.00

- Technical Elective V - Credit Hours: 3.00

General Electives (12 credits)

Nuclear Engineering General Education Requirements

(6 in Social sciences and 6 In Humanities)*

- Lower level Humanities - Credit Hours: 3.00
- Upper level Humanities - Credit Hours: 3.00
- Lower level Social Sciences - Credit Hours: 3.00
- Upper level Social Sciences - Credit Hours: 3.00

*University Core Courses can be applied to fulfill some of these requirements (UCC: Behavior Social Sciences, UCC: Humanities, and UCC: Science, Tech & Society). A maximum of 6 TR, CR, DC credits can be applied to the General Elective 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](#).

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry
- ENGR 13100 - Transforming Ideas To Innovation I
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- ENGL 10600 - First-Year Composition or
- SCLA 10100 - Transformative Texts, Critical Thinking And Communication I: Antiquity To Modernity or
- ENGL 10800 - Accelerated First-Year Composition or

- COM 20400 - Critical Perspectives On Communication or
- HONR 19903 - Interdisciplinary Approaches In Writing

13-17 Credits

Spring 1st Year

- CS 15900 - Programming Applications For Engineers
- ENGR 13200 - Transforming Ideas To Innovation II
- PHYS 17200 - Modern Mechanics
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- COM 11400 - Fundamentals Of Speech Communication or
- SCLA 10200 - Transformative Texts, Critical Thinking And Communication II: Modern World or
- COM 21700 - Science Writing And Presentation

14-17 Credits

Fall 2nd Year

- NUCL 29800 - Sophomore Seminar
- MA 26100 - Multivariate Calculus
- NUCL 20000 - Introduction to Nuclear Engineering ♦
- ME 27000 - Basic Mechanics I
- ME 20000 - Thermodynamics I
- General Elective I - Credit Hours: 3.00

16 Credits

Spring 2nd Year

- NUCL 29800 - Sophomore Seminar
- MA 26600 - Ordinary Differential Equations
- NUCL 27300 - Mechanics Of Materials
- NUCL 20500 - Nuclear Engineering Undergraduate Laboratory I
- ME 27400 - Basic Mechanics II
- PHYS 24100 - Electricity And Optics or
- PHYS 27200 - Electric And Magnetic Interactions
- General Elective II - Credit Hours: 3.00

17-18 Credits

Fall 3rd Year

- NUCL 39800 - Junior Seminar
- NUCL 32500 - Nuclear Materials Laboratory
- NUCL 30000 - Nuclear Structure And Radiation Interactions
- NUCL 32000 - Introduction To Materials For Nuclear Applications
- NUCL 35000 - Nuclear Thermal-Hydraulics I
- MA 26500 - Linear Algebra
- General Elective III - Credit Hours: 3.00

18 Credits

Spring 3rd Year

- NUCL 39800 - Junior Seminar
- NUCL 31000 - Introduction To Neutron Physics
- NUCL 35100 - Nuclear Thermal-Hydraulics II
- NUCL 35500 - Nuclear Thermohydraulics Laboratory
- Math Elective (MA 300+) - Credit Hours: 3.00
- Technical Elective - Credit Hours: 3.00

15 Credits

Fall 4th Year

- NUCL 30500 - Nuclear Engineering Undergraduate Laboratory II
- NUCL 40200 - Engineering Of Nuclear Power Systems
- NUCL 44900 - Senior Design Proposal
- NUCL 49800 - Senior Seminar
- NUCL 51000 - Nuclear Reactor Theory I or
- NUCL 42001 - Radiation Interaction With Materials And Applications
- Technical Elective - Credit Hours: 6.00

15 Credits

Spring 4th Year

- ECE 20100 - Linear Circuit Analysis I
- NUCL 45000 - Design In Nuclear Engineering
- NUCL 49800 - Senior Seminar
- Technical Elective - Credit Hours: 6.00
- General Elective IV - Credit Hours: 3.00

15 Credits

Note

Students must have a graduation index of 2.0

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.

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Minor

Nuclear Engineering Minor

A minor in nuclear engineering is available to any student. Available areas of specialization include reactor physics, nuclear power systems, nuclear fusion, direct energy conversion, neural fuzzy approaches, reactor thermal-hydraulics, nuclear materials and radioactive waste management.

For more information, email the Nuclear Engineering Student Services Office.

Nuclear Engineering Minor Requirements (12 credits)

Required Courses (6 credits)

- NUCL 20000 - Introduction to Nuclear Engineering
- NUCL 30000 - Nuclear Structure And Radiation Interactions

One group from the following (6 credits)

- NUCL 32000 - Introduction To Materials For Nuclear Applications and
- NUCL 42001 - Radiation Interaction With Materials And Applications
OR
- NUCL 46000 - Introduction To Controlled Thermonuclear Fusion and
- NUCL 56000 - Introduction To Fusion Technology
OR
- NUCL 31000 - Introduction To Neutron Physics and
- NUCL 40200 - Engineering Of Nuclear Power Systems
OR
- NUCL 20500 - Nuclear Engineering Undergraduate Laboratory I and
- NUCL 30500 - Nuclear Engineering Undergraduate Laboratory II
OR

- NUCL course - Credit Hours: 3.00 and
 - Additional course - Credit Hours: 2.00-3.00
- OR
- NUCL course* - Credit Hours: 3.00
 - NUCL course* - Credit Hours: 3.00

Notes

- Provided the above 12 credit hours are successfully completed with a grade of "C" or better in all of the courses, a NE Minor will be awarded.
- All of the above perscribed minor courses must be taken at Purdue West Lafayette campus to be eligible for the NE Minor.
- *These are a combination of two upper division NE courses recommended by NE faculty.
- Minimum Pre-requisites and/or Co-requisites include: MA 16500, MA 16600, MA 26100, MA 26200 (or MA 26500 + MA 26600); PHYS 17200, PHYS 24100 (or PHYS 26100 or PHYS 27200), or ENGR 16200.

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