ELECTRICAL ENGINEERING, BS

Today, electrical engineering has applications in every aspect of our daily lives. Electrical engineers are responsible for creating a wide range of devices that are used regularly, such as mobile computing systems, semiconductor chips, wind, solar and fusion power generators, robotic actuators, MRI machines, X-ray scanners, electric vehicles, and avionics. They also work on developing the algorithms that enable these machines to function according to our needs. As an electrical engineering major, you will learn the fundamental principles behind the operation of these devices and systems. You will gain the skills to analyze and design them, as well as improve upon existing technology throughout your career. You can also specialize in emerging technologies such as semiconductor engineering (https://guide.wisc.edu/undergraduate/engineering/electrical-computer-engineering/electrical-engineering-bs/electrical-engineering-semiconductor-engineering-bs/) or machine learning and data science (https://guide.wisc.edu/undergraduate/engineering/electrical-computer-engineering/electrical-engineering-bs/electrical-engineering-machine-learning-data-science-bs/) and earn a named option on your transcript.

HOW TO GET IN

HOW TO GET IN

ADMISSION TO THE COLLEGE AS A FIRST-YEAR STUDENT

Students applying to UW–Madison (https://www.admissions.wisc.edu/apply/) need to indicate an engineering major (https://engineering.wisc.edu/degrees-programs/undergraduate/) as their first choice in order to be considered for direct admission to the College of Engineering. Direct admission means that students get to start their college career in the engineering program of their choice and have access to engineering-specific resources and facilities. Students who are directly admitted need to meet progression requirements (https://engineering.wisc.edu/student-services/undergraduate-student-advising/progression/) at the end of the first year to guarantee advancement in that program.

CURRENT UW-MADISON STUDENTS (CROSS-CAMPUS TRANSFER TO ENGINEERING)

Requirements	Details
How to get in	Application required. Meeting the requirements listed below does not guarantee admission. (https://engineering.wisc.edu/admissions/undergraduate/cross-campus-students (https://engineering.wisc.edu/admissions/undergraduate/cross-campus-students/)/)
Application restrictions	• Students may apply a maximum of two times. • Students who have earned more than 72 course credits at UW-Madison (as indicated on the UW-Madison transcript) at the time of application are not eligible to apply for admission to the College of Engineering. Course credits in progress at the time of application are not included in the COE Credit Limit. • Students may apply to only one engineering degree program per admissions cycle. • Students who meet course/credit requirements and have a Core GPA below 2.500 would not be considered for admission in their selected engineering degree program (major) without an appeal process. All graded UW-Madison courses referenced in the Foundational Courses List and any degree program engineering courses level 200 or higher will be counted in the Core GPA (excludes E P D, INTEREGR, special topics, independent study, and seminar courses). All graded UW-Madison courses count in the Overall GPA. For one and only one of these core courses that a student has repeated, the more recent of the two grades will be used in the calculation of Core and Overall GPAs for admission purposes. Students may not be considered for admission if on academic probation for GPA reasons at time of review.
Credits required to get in	24 graded credits completed at UW-Madison, including at least one full-time (12 credit) semester. English as a Second Language course credits count toward the 24 credit minimum.
Courses required to get in	Engr Comm 1 (Comm A) requirement taken on a graded basis at UW-Madison. If the Comm A requirement has been satisfied through placement test, AP/IB, or transfer credit, then a liberal studies course of at least 3 credits (breadth designation of Humanities, Literature, or Social Sciences) must be taken on a graded basis at UW-Madison. Math course sequence through MATH 222. Four foundational courses completed on a graded basis at UW-Madison, as defined in the Foundational Courses List below.

Foundational courses list

Four Foundational Courses must be completed at UW-Madison as defined in 1. and 2.

1. Math Foundation

A minimum of two math courses numbered 221 or higher; one math course 300 level or higher; or calculus sequence completed through MATH 234. Excludes MATH 228, MATH/HIST SCI 473, special topics, independent study, seminar, pass/fail, and credit/no credit courses.

2. Engineering Foundation

A minimum of two courses as defined below:

Chemical Engineering:
(i) one course must be CHEM 104 or higher
(ii) one course must be PHYSICS 201/E M A 201 or higher

If the above two course requirements are completed with transfer or test credit, select from additional engineering foundation courses in (ii) below.

Aerospace Engineering, Biomedical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Mechanics, Engineering Physics, Environmental Engineering, Geological Engineering, Industrial Engineering, Materials Science and Engineering, Mechanical Engineering, Nuclear Engineering:
(i) one course must be CHEM 104 or higher OR PHYSICS 201/E M A 201 or higher
(ii) one other engineering foundation course from the following subject codes:

- Chemistry
- E M A 201, E M A 202, E M A 303
- PHYSICS 201 or higher
- Statistics, calculus-based
- COMP SCI 200, COMP SCI 220, COMP SCI 300 or higher, excluding COMP SCI 304
- excludes special topics, independent study, seminar, pass/fail, and credit/no credit courses

3. Additional foundational course options, if applicable
If the math and engineering foundational courses for the degree program are complete, then degree program engineering courses 200 level or higher can be taken to complete the Four Foundational Courses requirement. Excludes EPD, InterEGR, special topics, independent study, seminar, pass/fail, and credit/no credit courses.

Additional considerations

Cross-campus admission is selective. The admissions committee considers applicants' grades/grade trends, academic rigor, and personal statement. The College of Engineering offers an online information tutorial and advising (https://engineering.wisc.edu/admissions/undergraduate/cross-campus-students/) for students to learn about the cross-campus transfer process.

Semester	Deadline to apply	Decision notification timeline
To apply for a fall start	Mid May	Late June
To apply for a spring start	Late December/Early January	Late January
To apply for a summer start	This program does not accept applications to start in the summer.	

OFF-CAMPUS TRANSFER TO ENGINEERING

With careful planning, students at other accredited institutions can transfer coursework that will apply toward engineering degree requirements at UW–Madison. Off-campus transfer applicants are considered for direct admission to the College of Engineering by applying to the Office of Admissions with an engineering major listed as their first choice. Those who are admitted to their intended engineering program must meet progression requirements (https://engineering.wisc.edu/admissions/undergraduate/transfer-from-off-campus/) at the point of transfer or within their first two semesters at UW–Madison to guarantee advancement in that program. Transfer admission to the College of Engineering is selective. A minimum of 30 credits in residence in the College of Engineering is required after transferring, and all students must meet all requirements for their engineering major.

The College of Engineering has dual degree transfer agreements with select four-year UW System campuses and a transfer agreement with Madison College. Eligible students in COE's transfer agreements automatically meet progression at the point of transfer.

Off-campus transfer students are encouraged to discuss their interests, academic background, and admission options with the Transfer & Academic Program Manager in the College of Engineering: ugtransfer@engr.wisc.edu.

SECOND BACHELOR'S DEGREE

The College of Engineering does not accept second undergraduate degree applications. Second degree student (https://engineering.wisc.edu/admissions/undergraduate/adult-students-second-degree-students/)s (https://engineering.wisc.edu/student-services/undergraduate-student-advising/) might explore the Biological Systems Engineering program at UW–Madison, an undergraduate engineering degree elsewhere, or a graduate program in the College of Engineering.

REQUIREMENTS

UNIVERSITY REQUIREMENTS

All undergraduate students must complete both the following Core General Education (Core GenEd) and University Degree and Quality of Work requirements. The requirements below apply to students whose first term at UW-Madison or whose earliest post-high school college attendance at any institution is Summer 2026 or later.

Students whose first term at UW-Madison or whose earliest post-high school college attendance at any institution occurred before Summer 2026 should refer to the archived Guide (https://guide.wisc.edu/archive/) for the requirements that apply to them.

CORE GENERAL EDUCATION (CORE GENED) REQUIREMENTS

Civics & Perspectives	3 credits of Civics & Perspectives coursework.
Communicatio & Literacy	6 credits of Communication & Literacy coursework. This requirement may be partially satisfied by a qualifying placement test score. More information: https://go.wisc.edu/qualifyingenglishplacement (https://go.wisc.edu/qualifyingenglishplacement/)
Humanities & Arts	6 credits of Humanities & Arts coursework.
Mathematics & Quantitative Reasoning	6 credits of Mathematics & Quantitative Reasoning coursework. This requirement may be partially satisfied by a qualifying placement test score. More information: https://go.wisc.edu/qualifyingmathplacement (https://go.wisc.edu/qualifyingmathplacement/)
Natural Science & Wellness	Complete both: • 6 credits of Natural Science & Wellness or Natural Science & Wellness + Laboratory coursework. • one course must be in Natural Science & Wellness + Laboratory coursework.

Social & Behavioral Science	3 credits of Social & Behavioral Science coursework.
Total Credits	30 credits.

For more information see the policy (https://policy.wisc.edu/library/UW-1095/).

UNIVERSITY DEGREE AND QUALITY OF WORK REQUIREMENTS

All undergraduate degree recipients must complete the following minimum requirements. Requirements for some programs will exceed these requirements; see program requirements for additional information.

Total Degree	120 degree credits.
Residency	Complete 30 credits in residence. A course is considered "in residence" if it is taken when in undergraduate degree-seeking status and: • is offered by UW-Madison and completed on the UW-Madison campus or at an approved off-site location, or • is offered by UW-Madison in an online or distance format, or is completed during participation in a UW-Madison study abroad/study away program.
Quality of Work	Achieve at least the minimum grade point average specified by the school, college, and/or academic program.
Math	Demonstrate minimal mathematics competence by: • placing above MATH 96, or, • successfully completing MATH 96, or • successfully completing a more advanced mathematics course such as MATH 112, MATH 113, MATH 114, MATH 141, MATH 211, or MATH 221.
English Language	If required to take the UW-Madison English as a Second Language Assessment Test (MSN-ESLAT), demonstrate minimal English language competence by: • earning credit for ESL 118, or • achieving a qualifying MSN-ESLAT placement test score.
Language	Complete one: • 2 high school units of a single language other than English, or • one course with the second semester Language designation.
Major Declaration	Declare and complete the requirements for at least one major.

COLLEGE OF ENGINEERING DEGREE GRANTING PROGRAMS' COMMON REQUIREMENTS

The College of Engineering departments collaborated and adopted a common set of guidelines in their degree granting program (major) requirements. Engineering departments incorporate specific coursework within their curricula to meet these guidelines. Students should refer to specific coursework detailed below the Summary of Requirements.

COLLEGE OF ENGINEERING DEGREE GRANTING PROGRAMS' COMMON REQUIREMENTS

Communication	All College of Engineering majors require two levels of communication coursework: • Engineering Communication 1: one course with the Communication A designation or satisfaction of Communication A based on eligible UW Placement Score. • Engineering Communication 2: each major specifies one course (e.g. INTEREGR 397) which also carries the Communication B designation.
Quantitative Reasoning	All College of Engineering majors require a math sequence that incorporates two levels of quantitative reasoning.
Humanities or Literature	All College of Engineering majors require a minimum of 6 credits with the Humanities or Literature breadth designations. See major Liberal Studies Electives Requirement below.
Social Sciences	All College of Engineering majors require a minimum of 3 credits with the Social Sciences breadth designation. See major Liberal Studies Electives Requirement below.
Natural Sciences	All College of Engineering majors require specific coursework that incorporates a minimum of 6 credits with the Biological, Natural, or Physical Science breadth designations.
Ethnic Studies	All College of Engineering majors require at least one course of at least 3 credits with the Ethnic Studies designation. This course may also be used to satisfy the Social Sciences or Humanities or Literature requirement.

ELECTRICAL ENGINEERING, BS CURRICULUM

This curriculum applies to students admitted to the degree program this Guide academic year. Curricular requirements for students admitted in previous semesters are available in the Archive (https://guide.wisc.edu/archive/) section of Guide.

SUMMARY OF REQUIREMENTS

Code	Title	Credits
Mathematics		16
Science		17-18
Electrical Engineering Core		32
Electrical Engineering Advanced Electives		24
Professional Electives		9
Communication Skills		6
Liberal Studies Electives		15
Free Elective		1
Total Credits		**120-121**

MATHEMATICS [1]

Code	Title	Credits
MATH 221	Calculus and Analytic Geometry 1	5
MATH 222	Calculus and Analytic Geometry 2	4
MATH 234	Calculus--Functions of Several Variables [2]	4

Probability and Statistics Elective		3
STAT 311	Introduction to Theory and Methods of Mathematical Statistics I	
STAT 424	Statistical Experimental Design	
MATH/STAT 431	Introduction to the Theory of Probability	
E C E 331	Introduction to Random Signal Analysis and Statistics	
Total Credits		**16**

[1] In additional to the courses listed in the Mathematics Requirement at least one additional course must be completed for the advanced mathematics auxiliary condition. Choose: MATH 319 Techniques in Ordinary Differential Equations, MATH 320 Linear Algebra and Differential Equations, MATH 340 Elementary Matrix and Linear Algebra, MATH 341 Linear Algebra, MATH 345 Linear Algebra and Optimization, E C E 334 State Space Systems Analysis, or E C E/ COMP SCI/M E 532 Matrix Methods in Machine Learning to satisfy the advanced math auxiliary condition. These credits count toward either professional electives or advanced elective credit depending on the course.

[2] MATH 375 and MATH 376 taken in sequence will fulfill the requirement for MATH 234, professional elective credit, and advanced math auxiliary condition.

SCIENCE

Code	Title	Credits
COMP SCI 300	Programming II	3
PHYSICS 201	General Physics [1]	5
or PHYSICS 207	General Physics	
or PHYSICS 247	A Modern Introduction to Physics	
PHYSICS 202	General Physics	5
or PHYSICS 208	General Physics	
or PHYSICS 248	A Modern Introduction to Physics	
Select one of the following:		4-5
CHEM 109	Advanced General Chemistry	
CHEM 103	General Chemistry I	
CHEM 104	General Chemistry II	
Total Credits		**17-18**

[1] Students may also fulfill this requirement by taking E M A 201 Statics and E M A 202 Dynamics.

ELECTRICAL ENGINEERING CORE

Code	Title	Credits
E C E 203	Signals, Information, and Computation	3
E C E 210	Introductory Experience in Electrical Engineering	2
E C E 222	Electrodynamics I	4
E C E 230	Circuit Analysis	4
E C E/PHYSICS 235	Introduction to Solid State Electronics	3
E C E/ COMP SCI 252	Introduction to Computer Engineering	3
E C E 270	Circuits Laboratory I	1
E C E 271	Circuits Laboratory II	1
E C E 330	Signals and Systems	3
E C E 340	Electronic Circuits I	3
E C E/ COMP SCI 352	Digital System Fundamentals	3
E C E 370	Advanced Laboratory	2
Total Credits		**32**

ELECTRICAL ENGINEERING ADVANCED ELECTIVES

Students must take 24 credits of advanced electives. A minimum of 21 credits must be from at least three of the six areas. A minimum of two laboratory courses must be taken.

- At least 9 credits must be in E C E courses numbered 400 and above.
- At least one course must be a capstone design course from the following list: E C E 453 Embedded Microprocessor System Design, E C E 454 Mobile Computing Laboratory, E C E 455 Capstone Design in Electrical and Computer Engineering, E C E 554 Digital Engineering Laboratory. These courses are also indicated in the areas below with a *.
- At least one course must be MATH 319 Techniques in Ordinary Differential Equations, MATH 320 Linear Algebra and Differential Equations, MATH 340 Elementary Matrix and Linear Algebra, MATH 341 Linear Algebra, MATH 345 Linear Algebra and Optimization, E C E 334 State Space Systems Analysis, or E C E/ COMP SCI/M E 532 Matrix Methods in Machine Learning to satisfy the advanced math auxiliary condition. MATH 319, MATH 320, MATH 340, and MATH 341, and MATH 345 count toward professional electives. E C E 334 and E C E/COMP SCI/M E 532 count as advanced electives.
- Students can count 1 credit of E C E 1 Cooperative Education Program toward advanced electives.
- Students can count up to 6 credits of E C E 399 Independent Study , E C E 489 Honors in Research or E C E 699 Advanced Independent Study towards advanced electives.
- Students can take E C E 379 Special Topics in Electrical and Computer Engineering and E C E 601 Special Topics in Electrical and Computer Engineering as advanced electives.
- Students can count up to 5 credits of COMP SCI courses numbered 500 and above (not including independent study)
- E C E courses numbered 300 and above that are not specified in an area can count toward the total number of advanced elective credits required.

Laboratory

Code	Title	Credits
Select at least one course from E C E 301 to E C E 317		
An additional laboratory course must be taken from the following list:		
E C E 303	Introduction to Real-Time Digital Signal Processing	2
E C E 304	Electric Machines Laboratory	1
E C E 305	Semiconductor Properties Laboratory	1
E C E 313	Optoelectronics Lab	1

E C E 315	Introductory Microprocessor Laboratory	1
E C E 317	Sensors Laboratory	1
E C E 432	Digital Signal Processing Laboratory	3
E C E/B M E 462	Medical Instrumentation	3
E C E 504	Electric Machine & Drive System Laboratory	3
E C E 512	Power Electronics Laboratory	3
E C E 545	Advanced Microwave Measurements for Communications	3
E C E 549	Integrated Circuit Fabrication Laboratory	4
E C E/M E 577	Automatic Controls Laboratory	4

Fields & Waves

Code	Title	Credits
E C E 320	Electrodynamics II	3
E C E 420	Electromagnetic Wave Transmission	3
E C E 434	Photonics	3
E C E/N E/ PHYSICS 525	Introduction to Plasmas	3
E C E/N E/ PHYSICS 527	Plasma Confinement and Heating	3
E C E/N E 528	Plasma Processing and Technology	3
E C E 535	Introduction to Quantum Sensing	3
E C E 536	Integrated Optics and Optoelectronics	3
E C E 547	Advanced Communications Circuit Design	3

Systems & Control

Code	Title	Credits
E C E 332	Feedback Control Systems	3
E C E 334	State Space Systems Analysis	3
E C E/M E 439	Introduction to Robotics	3
E C E/M E 577	Automatic Controls Laboratory	4

Power & Machines

Code	Title	Credits
E C E 355	Electromechanical Energy Conversion	3
E C E 356	Electric Power Processing for Alternative Energy Systems	3
E C E 411	Introduction to Electric Drive Systems	3
E C E 412	Power Electronic Circuits	3
E C E 427	Electric Power Systems	3
E C E 504	Electric Machine & Drive System Laboratory	3
E C E 511	Theory and Control of Synchronous Machines	3
E C E 512	Power Electronics Laboratory	3

Communications & Signal Processing

Code	Title	Credits
E C E 331	Introduction to Random Signal Analysis and Statistics	3
E C E 401	Electro-Acoustical Engineering	3
E C E 431	Digital Signal Processing	3
E C E 432	Digital Signal Processing Laboratory	3
E C E/COMP SCI/ MATH 435	Introduction to Cryptography	3
E C E 436	Communication Systems I	3
E C E 437	Communication Systems II	3
E C E 447	Applied Communications Systems	3
E C E/COMP SCI/ M E 532	Matrix Methods in Machine Learning	3
E C E/ COMP SCI 533	Image Processing	3
E C E 537	Communication Networks	3
E C E/COMP SCI/ M E 539	Introduction to Artificial Neural Networks	3
E C E/I SY E 570	Ethics of Data for Engineers	3

Circuits & Devices

Code	Title	Credits
E C E 335	Microelectronic Devices	3
E C E 342	Electronic Circuits II	3
E C E 445	Semiconductor Physics and Devices	3
E C E/B M E 462	Medical Instrumentation	3
E C E 466	Electronics of Solids	3
E C E 541	Analog MOS Integrated Circuit Design	3
E C E 542	Introduction to Microelectromechanical Systems	3
E C E 545	Advanced Microwave Measurements for Communications	3
E C E 548	Integrated Circuit Design	3
E C E 549	Integrated Circuit Fabrication Laboratory	4
E C E 555	Digital Circuits and Components	3
E C E/M E 576	Printed and Flexible Electronics: Manufacturing, Devices, and Applications	3

Computers & Computing

Code	Title	Credits
E C E 353	Introduction to Microprocessor Systems	3
E C E/ COMP SCI 354	Machine Organization and Programming	3
E C E 453	Embedded Microprocessor System Design *	4
E C E 454	Mobile Computing Laboratory *	4
E C E/B M E 463	Computers in Medicine	3
E C E/ COMP SCI 506	Software Engineering	3
E C E 551	Digital System Design and Synthesis	3

E C E/ COMP SCI 552	Introduction to Computer Architecture	3
E C E 553	Testing and Testable Design of Digital Systems	3
E C E 554	Digital Engineering Laboratory *	4
E C E 556	Design Automation of Digital Systems	3

* Course is designated as a Capstone Course

PROFESSIONAL ELECTIVES

Code	Title	Credits
Classes to be taken in an area of professional interest. The following courses are acceptable as professional electives if the courses are not used to meet any other degree requirements.		9
MATH/ COMP SCI 240	Introduction to Discrete Mathematics	
E C E 204	Data Science & Engineering	
E C E 320	Electrodynamics II	
E C E 331	Introduction to Random Signal Analysis and Statistics	
E C E 332	Feedback Control Systems	
E C E 334	State Space Systems Analysis	
E C E 335	Microelectronic Devices	
E C E 342	Electronic Circuits II	
E C E 353	Introduction to Microprocessor Systems	
E C E/ COMP SCI 354	Machine Organization and Programming	
E C E 355	Electromechanical Energy Conversion	
E C E 356	Electric Power Processing for Alternative Energy Systems	
E C E courses numbered 399 and higher		
COMP SCI courses numbered 400 and higher		
MATH 319	Techniques in Ordinary Differential Equations	
MATH 320	Linear Algebra and Differential Equations [1]	
MATH 321	Applied Mathematical Analysis 1: Vector and Complex Calculus	
MATH 322	Applied Mathematical Analysis 2: Partial Differential Equations	
MATH 340	Elementary Matrix and Linear Algebra [1]	
MATH 341	Linear Algebra	
MATH 345	Linear Algebra and Optimization	
MATH courses numbered 400 and higher		
STATS courses numbered 400 and higher		
Any biological science course that is designated as intermediate or advanced		
Any physical science course that is designated as intermediate or advanced (except PHYSICS 241)		
Any natural science course that is designated as advanced except that Math, Computer Sciences, and Statistics courses must follow the above criteria		
Engineering courses numbered 300 and higher that are not E C E or cross-listed with E C E		
Up to six credits of Professional Electives can be taken from School of Business classes numbered 300 and higher.		
DANCE 560	Current Topics in Dance: Workshop (Making Digital Lighting Controls)	

[1] Students may only earn degree credit for MATH 320 Linear Algebra and Differential Equations or MATH 340 Elementary Matrix and Linear Algebra, not both.

COMMUNICATION SKILLS

Code	Title	Credits
Engr Comm 1		
INTEREGR 156	Introduction to Writing, Speaking, and Ethics for Engineers	3
or ENGL 100	Introduction to College Composition	
or LSC 100	Science and Storytelling	
or COM ARTS 100	Introduction to Speech Composition	
or COM ARTS 181	Elements of Speech-Honors Course	
or ESL 118	Academic Writing II	
Engr Comm 2		
INTEREGR 397	Engineering Communication	3
Total Credits		**6**

LIBERAL STUDIES ELECTIVES

Code	Title	Credits
College of Engineering Liberal Studies Electives Requirements		
Complete requirements (https://guide.wisc.edu/undergraduate/engineering/#requirementstext)		15
Total Credits		**15**

HONORS IN RESEARCH PROGRAM

Qualified undergraduates may earn an Honors in Research designation in their transcript. The Honors in Research program gives an undergraduate the opportunity to participate in a research project under the direction of a faculty member. It is expected that the student will be actively involved in research that could lead to new knowledge. The project can be independent or a component of a larger team effort.

Admission Requirements include:

1. Complete at least one semester on the UW-Madison campus,
2. Have a cumulative GPA of at least 3.5,
3. Major in Computer Engineering (CMPE) or Electrical Engineering (EE),
4. Identify an ECE faculty advisor who is willing to supervise the research project.

Students admitted to the program should register for one to three credits of E C E 489 Honors in Research. A thesis worth three credits of E C E 489 Honors in Research is required. The thesis is a written document that

details the objectives of the project, the methods used to carry out the research, and the results of the research activity. The thesis must be approved by the faculty advisor and the student is encouraged to present a seminar.

The "Honors in Research" designation will be awarded to graduates who:

1. Complete either the CMPE or EE degree requirements.
2. Have a cumulative GPA of at least 3.3 at graduation.
3. Complete a total of at least six credits of E C E 489 Honors in Research.
4. Receive a final grade of at least B in E C E 489 Honors in Research.

NAMED OPTION

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- **ELECTRICAL ENGINEERING: MACHINE LEARNING AND DATA SCIENCE, BS (HTTPS://GUIDE.WISC.EDU/UNDERGRADUATE/ENGINEERING/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-BS/ELECTRICAL-ENGINEERING-MACHINE-LEARNING-DATA-SCIENCE-BS/)**
- **ELECTRICAL ENGINEERING: SEMICONDUCTOR ENGINEERING, BS (HTTPS://GUIDE.WISC.EDU/UNDERGRADUATE/ENGINEERING/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-BS/ELECTRICAL-ENGINEERING-SEMICONDUCTOR-ENGINEERING-BS/)**

LEARNING OUTCOMES

LEARNING OUTCOMES

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.

FOUR-YEAR PLAN

FOUR-YEAR PLAN

SAMPLE FOUR-YEAR PLAN

First Year

Fall	Credits	Spring	Credits
MATH 221	5	E C E/COMP SCI 252	3
CHEM 103, 104, or 109	4-5	PHYSICS 201	5
E C E 210	2	MATH 222	4
or Engr Comm 1		Engr Comm 1 or	3
Liberal Studies Elective	3	E C E 210	
	14		**15**

Second Year

Fall	Credits	Spring	Credits
E C E 203	3	E C E 222	4
PHYSICS 202	5	E C E 230	4
MATH 234	4	E C E 270	1
Liberal Studies Elective	3	COMP SCI 300	3
		Free Elective	1
	15		**13**

Third Year

Fall	Credits	Spring	Credits
E C E/PHYSICS 235	3	ECE Advanced Elective	3
Statistics/Probability Elective	3	ECE Advanced Elective	3
E C E 271	1	INTEREGR 397	3
E C E 330	3	EE Advanced Lab (3XX)	1
E C E 340	3	Liberal Studies Elective	3
E C E/COMP SCI 352	3	Professional Elective (Adv Math)	3
	16		**16**

Fourth Year

Fall	Credits	Spring	Credits
E C E 370	2	ECE Advanced Elective (4XX)	3
ECE Advanced Elective	3	ECE Advanced Elective (4XX)	3
ECE Advanced Elective	3	ECE Capstone Design	4
EE Advanced Lab (3XX)	1	Professional Elective	3
Liberal Studies Elective	3	Liberal Studies Elective	3
Professional Elective	3		
	15		**16**

Total Credits 120

ADVISING AND CAREERS

ADVISING AND CAREERS

ADVISING

Every College of Engineering undergraduate has an assigned academic advisor (https://engineering.wisc.edu/student-services/undergraduate-student-advising/). Academic advisors support and coach students through their transition to college and their academic program all the way through graduation.

Advisors help students navigate the highly structured engineering curricula and course sequencing, working with them to select courses each semester.

When facing a challenge or making a plan toward a goal, students can start with their academic advisor. There are many outstanding resources at UW–Madison, and academic advisors are trained to help students navigate these resources. Advisors not only inform students about the various resources, but they help reduce the barriers between students and campus resources to help students feel empowered to pursue their goals and communicate their needs.

Students can find their assigned advisor in their MyUW Student Center.

ENGINEERING CAREER SERVICES

Engineering Career Services (https://ecs.wisc.edu) (ECS) assists students in finding work-based learning experiences such as co-ops and summer internships, exploring and applying to graduate or professional school, and finding full-time professional employment.

ECS offers two large career fairs per year, assists students with resume building and developing interviewing skills, hosts skill-building workshops, and meets one-on-one with students to discuss offer negotiations.

Students are encouraged to engage with the ECS office early in their academic careers. For more information on ECS programs and workshops, visit: https://ecs.wisc.edu.

ACCREDITATION

ACCREDITATION

Accredited by the Engineering Accreditation Commission of ABET (https://www.abet.org/), https://www.abet.org, under the commission's General Criteria and Program Criteria for Electrical, Computer, Communication, Telecommunication(s), and Similarly Named Engineering Programs.

PROGRAM EDUCATIONAL OBJECTIVES FOR THE BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Within the first few years after graduation, our graduates should be engaged in activities such as:

1. Employment in industry, government, academia, or nonprofit using their degree knowledge or skills for professional functions such as teaching, research and development, quality control, technical marketing, intellectual property management, or sales. Graduates may eventually reach a leadership position supervising others.
2. Continuing education through self-study or short courses and workshops through their employer, local or online educational institutions, or attendance at professional events such as conferences.
3. Taking a principal role in starting a new business or product line.
4. Pursuing a postgraduate degree.

Note: Undergraduate Student Outcomes, number of degrees conferred, and enrollment data are made publicly available at the Electrical Engineering Undergraduate Program website. (https://engineering.wisc.edu/programs/degrees/electrical-engineering-bs/) (In this Guide, the program's Student Outcomes are available through the "Learning Outcomes" tab.)