COLLEGE OF ENGINEERING, ARCHITECTURE AND TECHNOLOGY

College Administration

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Campus Address and Phone

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The vision of the College of Engineering, Architecture and Technology (CEAT) is "To be the leading public university in engineering, architecture, and technology that engages diverse students, faculty and staff with industry and government to deliver excellence in advanced learning, leadership, relevant research, and benefits to society."

"Our mission is to provide a diverse population with a quality education in engineering, architecture and technology. Through CEAT, OSU develops ethical leaders who promote economic and community vitality with technical knowledge, innovation, and communication expertise that connects scientific research, professional education, technical assistance and scholarship to industry, the State of Oklahoma, the nation and the world."

The College of Engineering, Architecture and Technology is a community of scholars, innovators and leaders that is transforming our lives. The preparation of professionals that anticipate the needs of a changing world is at the nexus of society, economy, ethics, sustainability and humanity. The College is committed to educating professionals that innovate, design and build projects that provide solutions for both the developed and the developing world.

The mission of the College of Engineering, Architecture and Technology (CEAT) is one that embraces students from diverse backgrounds to imagine and discover the challenges of engineering, architecture and technology, and to bring about innovation using their proficiency in science, mathematics, communications, ethics and humanity. This mission is built on the foundation of the University's mission and the expectations of a world class university.

As Oklahoma's land-grant university, CEAT fulfills the most fundamental premise that founded OSU; to promote economic and community viability through technical assistance, academic and professional education, training and communication in the areas of engineering, architecture and technology, and by connecting scientific research and scholarship to industry, communities, and individual citizens in Oklahoma, the region and the world.

As we progress into the future, professionals with a higher education will continue to be largely responsible for shaping our world. The power they exercise is an exciting prospect and presents a sobering responsibility. Less complex problems have been solved and are now a part of history. Many difficult problems remain. The need for talented and highly educated professionals is obvious; one will be embarking on a lifetime of challenge as he or she prepares for a career in engineering, engineering technology or architecture at Oklahoma State University.

The College of Engineering, Architecture and Technology offers a complete spectrum of educational opportunities at both the undergraduate and graduate levels designed to give graduates the capability and flexibility to meet the ever-changing needs of a society that is committed to technological innovation. To make continuing contributions, engineers, architects and technologists must have many abilities at their command. The modern tools and processes of industry must be understood. The processes of design and analysis require a firm understanding of mathematics and the sciences. An effective engineer, architect or engineering technologist must develop sensitivity to human needs, ideas, institutions and cultures. These programs prepare graduates to be effective contributors within human organizations and provide an increased understanding of both the technical and non-technical factors that shape our human environment. With this firm foundation, and a commitment to lifelong learning, College of Engineering, Architecture and Technology graduates are fully prepared to make contributions to society throughout their professional careers.

The curriculum in each program provides the optimum combination of breadth in the enduring fundamentals and specialization in a discipline. Each curriculum sensitizes the student to ethical, social, cultural, and global issues that will shape their ideas and contributions. To equip the student to contribute to solutions at the cutting edge of technology, curricula are continuously evolving to include current applications of the principles. Through the combination of theory, practice and improved sensitivity to diverse issues, graduates will be prepared to support their diverse interests while positively contributing to the advancement of technology and the world.

ENDEAVOR was opened in the fall of 2019. This one of a kind, hands-on, 72,000-square-foot facility allows undergraduate students to explore and experiment with engineering principles, systems, and new technologies. ENDEAVOR is a platform for interdisciplinary and collaborative learning and solutions that lead to entrepreneurial enterprise.

Academic Programs

Academic programs offered in the College of Engineering, Architecture and Technology culminate in the following degrees:

Schools of Engineering

- Bachelor of Science in Aerospace Engineering, Biosystems Engineering with options in Bioprocessing and Food Processing, Environment and Natural Resources, Machine Systems and Agricultural Engineering, and Pre-medical; Chemical Engineering with options in Biomedical/Biochemical and Pre-medical; Civil Engineering with an option in Environmental; Computer Engineering; Electrical Engineering; Industrial Engineering and Management; and Mechanical Engineering with options in Premedical or Petroleum.
- Master of Science in Biosystems Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering with options in Control Systems and Optics and Photonics, Engineering and Technology Management, Industrial Engineering and Management, Materials Science and Engineering, Mechanical and Aerospace Engineering

with an option of Unmanned Aerial Systems and Petroleum Engineering.
- Master of Engineering in Electrical Engineering and Mechanical Engineering.
- Doctor of Philosophy in Biosystems Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering and Management, Materials Science and Engineering, Mechanical and Aerospace Engineering, and Petroleum Engineering.

School of Architecture

- Bachelor of Architecture, Bachelor of Architectural Engineering.
- Graduate Certificate in Integrative Design of Building Envelope.

Division of Engineering Technology

- Bachelor of Science in Engineering Technology in Construction Engineering Technology with options in Building and Heavy, Electrical Engineering Technology with a computer option, Fire Protection and Safety Engineering Technology, and Mechanical Engineering Technology.
- Master of Science in Engineering Technology with an option in Fire Safety and Explosion Protection.
- Master of Science in Fire and Emergency Management Administration.
- Doctor of Philosophy in Fire and Emergency Management Administration.

Accreditation

UNDERGRADUATE ENGINEERING DEGREE PROGRAMS

Undergraduate engineering programs are separately accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

UNDERGRADUATE ENGINEERING TECHNOLOGY DEGREE PROGRAMS

The undergraduate engineering technology programs are separately accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

UNDERGRADUATE ARCHITECTURE DEGREE PROGRAM

"In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year term, an eight-year term with conditions, or a two-year term of continuing accreditation, or a three-year term of initial accreditation, depending on the extent of its conformance with established education standards. Doctor of Architecture and Master of Architecture degree programs may require a non-accredited undergraduate degree in architecture for admission. However, the non-accredited degree is not, by itself, recognized as an accredited degree."

The Oklahoma State University School of Architecture offers the following NAAB-accredited degree programs:

B. Arch. (154 undergraduate credits)

Next accreditation visit: 2025

http://www.naab.org/.

High School Preparation

In addition to the curricular requirements for admission specified by OSU, the College of Engineering, Architecture and Technology strongly recommends that students have a fourth year of mathematics and an additional year of laboratory science.

Initial placement in OSU mathematics courses is by placement examination to ensure that each student will be challenged but has the preparation to be successful in the first mathematics course. Placement in science courses is based on prior preparation in the science and completion of or placement beyond prerequisite mathematics courses. When appropriate,a student with an exceptionally strong background can obtain academic credit by advanced standing examination or by College Level Examination Program (CLEP) tests or similar.

Enrolling in the College of Engineering, Architecture, and Technology

A freshman student who has been admitted to OSU can be enrolled directly into a CEAT degree program if the student has both of the following performance requirements:

1. an ACT Composite score of 24 or higher, or a total SAT score of 1160 or higher, and
2. an ACT MATH score of 24 or higher, or a SAT Math score of 600 or higher, OR achieve a GPA of 3.5 or higher (on a 4.00 grading scale standard weighting to The College Board's Advanced Placement courses and the International Baccalaureate higher-level courses) in the required 15 core high school courses.

SAT score is the combination of Critical Reading and Math sections only. SAT scores represent tests taken on or after the National March 2016 test.

Prospective engineering, architecture or technology students who do not meet these performance qualifications may enroll in any other college or may enroll in University College in the Pre-CEAT program and work with a CEAT-focused advisor to gain the academic background for enrollment in CEAT degree programs. Those students will be enrolled in a CEAT degree program when they have met the following performance requirements:

1. passed all prerequisite MATH courses needed to enroll in Calculus I or Calculus for Technology I, and
2. has an OSU Cumulative GPA of at least 2.0.

Transfer students can enroll directly into a CEAT degree program if they satisfy all OSU resident transfer student requirements, have a GPA of at least 2.0, and are qualified to enroll in Calculus I or higher in the MATH sequence. Other transfer students may enroll in University College in the Pre-CEAT program until they meet the qualifications for enrolling in a CEAT pre-professional program.

Students transferring to CEAT from another major at OSU must meet the same requirements for admission as a student transferring from another college or university.

Special College Programs

CEAT Living/ Learning Program (LLP). CEAT residential floors have been established in CEAT Parker Hall for both male and female CEAT students. Parker Hall is reserved for CEAT Freshman and provides an immersive environment to help freshman succeed in CEAT and at OSU. Special programming is provided, and upper-class mentors live on each of the floors. The CEAT Parker In Residence program allows a CEAT representative to live on the ground floor of Parker Hall and

provide inspiration and mentorship for students. The second floor of CEAT Parker Hall is referred to as Maude's Squad, and is our freshmen females LLP. All Living/ Learning Programs provide an atmosphere that is conducive to study. The students experience a community where they can work together, have access to tutoring and other services, and serve as role models for other students. Special activities are planned for the floors, including events with faculty and other leaders. They are highly recommended for student success in CEAT.

CEAT Summer Bridge is a three-week residential, on-campus, preparatory program for incoming freshmen students who have been accepted to Oklahoma State University and who plan to study a major in CEAT. This program is designed to guide students as they transition from high school to the academic rigors of CEAT coursework through academic review, mock exams, orientation seminars and engineering design projects. In addition, the students will build relationships with peers, faculty and staff, and start the process of building strong study habits with the assistance of CEAT upperclassmen as mentors. https://studentservices.okstate.edu/summer-bridge-program (https://studentservices.okstate.edu/summer-bridge-program/)

The **Discover Architecture Program** introduces high school students to Architecture, Architectural Engineering, Landscape Architecture, and Construction Science and Management. This week-long summer program has academic projects that are designed to stimulate creativity and be fun! Participants live in campus housing, and complete projects that include the application of sketching and designing in model, using computer presentation tools, and several hands-on building projects to help students understand if a career in the building arts might be right for them. The program is offered by Oklahoma State University faculty at the Stillwater campus for students who are at least 16 years of age. http://arch-ceat.okstate.edu/discover-architecture (http://arch-ceat.okstate.edu/discover-architecture/)

The **Pre-CEAT Program** is housed within University College but physically located in CEAT. This program provides a focused advisor, tutoring and other activities to help students get academically ready for success in CEAT.

CEAT Scholars Program provides educational experiences for a select group of students to develop and enhance their technical competence, world view, professional and public responsibility, and leadership skills. Based on demonstrated academic and leadership potential, up to 100 scholars are selected each year, by application and interview, to enter this four-year program. Students participate in special lectures, regional tours, cultural events, seminars, personal development activities, faculty mentoring, and international travel. https://ceat.okstate.edu/ceat-scholars-program (https://ceat.okstate.edu/ceat-scholars-program.html)

CEAT Freshman Research Scholars Program provides opportunities for accelerated intellectual development of a select group of students. Each student is assigned a research faculty mentor and participates in a research program. The initial assignment is for one year and it may be extended based on student interest, research project continuation and mentor availability. https://scholardevelopment.okstate.edu/freshman-research-scholars/prospective-freshman-researchers (https://scholardevelopment.okstate.edu/freshman-research-scholars/prospective-freshman-researchers/)

WW Allen Scholars Program is designed for top academic students, who also show significant promise in leadership and career ambition. The program is highlighted by the opportunity to pursue a master's degree at the University of Cambridge in the UK following graduation from OSU. https://ceat.okstate.edu/scholarships/w-w-allen-scholars-program.html

Phillips 66 SHIELD Scholars Program provides scholarships and professional and personal development through enrichment activities, seminars and community service. The program is for current students enrolled full-time in chemical engineering, civil engineering, computer engineering, electrical engineering, fire protection safety engineering technology, industrial engineering, mechanical engineering or materials engineering**.** http://ceat.okstate.edu/scholarships (http://ceat.okstate.edu/scholarships/)

CEAT Grand Challenge Scholars Programs focus on preparing students to be the generation that solves the grand challenges facing society in this century with emphasis on integrative research, interdisciplinary curriculums, entrepreneurship, global understanding and service learning. https://ceat.okstate.edu/site-files/im-files/gcsp_overview_final.pdf

CEAT Diversity and Inclusion Programs (CDP) provide services to support, retain and graduate all CEAT students which includes underrepresented populations such as Native Americans, African Americans, Hispanic/Latino Americans, Women, First-Generation, Non-Traditional, Disabled, Veterans and LGBTQ. All students are welcome to participate, learn and celebrate the value of a diverse CEAT community. https://studentservices.okstate.edu/diversity (https://studentservices.okstate.edu/diversity/).

CEAT Career Services is dedicated to helping students reach their career goals by providing individualized career assistance, specialized workshops, and resources on a variety of topics including career exploration, job search strategies, resume and job search correspondence preparation, interviewing skills, and salary negotiation. The office also supports the Cooperative Education Program (Co-op) and provides individual career assessments for undergraduate students. As part of the OSU Career Services system, CEAT Career Services works in close partnership with CEAT Student Academic Services to link academic and career success. http//studentservices.okstate.edu/career (http://studentservices.okstate.edu/career/)

CEAT Cooperative Education Program (Co-op) provides an avenue for undergraduate students to complete a year of full-time work experience directly related to their academic studies. Co-op students alternate terms of major-related employment with terms of full-time course work to achieve a quality education and industry experience. In addition to professional development, participation in the Co-op program earns academic credit and maintains full-time enrollment status for students during the work experience terms. http://studentservices.okstate.edu/cs/co-op (http://studentservices.okstate.edu/cs/co-op/)

CEAT Study Abroad Programs offer students the opportunity to expand their education by traveling and studying outside the United States. Opportunities range from shorter faculty-led programs to semester exchange opportunities.

Departmental Clubs and Honor Societies

Alpha Epsilon (Biosystems and Agricultural Engineering Honor Society)
Alpha Omega Epsilon (Professional and Social Sorority for Women in Engineering)
Alpha Pi Mu (Industrial Engineering and Management Honor Society)
Alpha Rho Chi (Architecture Honor Society)
Amateur Radio Club - W5YJ
American Association of Drilling Engineers
American Indian Science and Engineering Society

American Institute of Architecture Students
American Institute of Aeronautics & Astronautics
American Institute of Chemical Engineers
American Production and Inventory Control Society
American Society for Quality
American Society of Agricultural and Biological Engineers
American Society of Civil Engineers
American Society of Heating, Refrigeration and Air Conditioning Engineers
American Society of Mechanical Engineers
American Society of Safety Engineers
APICS
Architectural Engineering Institute
Architecture Students Teaching Elementary Kids (ASTEK)
CEAT Student Council
CHEM Kidz
Chi Epsilon (Civil and Architectural Engineering Honor Society)
Construction Management Society
Construction Specifications Institute
Cowboy Motorsports Quarter Scale Tractor Team
Engineers Without Borders
Eta Kappa Nu (Electrical and Computer Engineering Honor Society)
Fire Protection Society
Institute for Operations Research and the Management Sciences
Institute of Electrical and Electronics Engineers (two student branches)
Institute of Industrial and Systems Engineers
Institute of Transportation Engineers
International Fluid Power Society
International Society for Automation
National Society of Black Engineers
Omega Chi Epsilon (Chemical Engineering Honor Society)
Out in Science, Technology, Engineering, and Mathematics (oSTEM)
Pi Tau Sigma (Honorary Mechanical Engineering Society)
Sigma Gamma Tau (Honorary Aerospace Engineering Society)
Sigma Lambda Chi (Construction Engineering Technology Honor Society)
Society of Asian Scientists and Engineers
Society of Automotive Engineers
Society of Automotive Engineers Formula Racing Team
Society of Automotive Engineers Mini-Baja Team
Society of Fire Protection Engineers
Society of Hispanic Professional Engineers
Society of Petroleum Engineers
Society of Manufacturing Engineers
Society of Women Engineers
Student Association of Fire Investigators
Student Firefighter Combat Challenge Team
Tau Alpha Pi (Technology Student's Honor Society)
Tau Beta Pi (Engineering Student's Honor Society)

CEAT Honors Program

The OSU Honors College provides challenges for undergraduate students of unusually high ability, motivation and initiative. Honors classes, seminars and independent study courses are designed to align students and instructors in a manner that encourages discussion and provides a mature approach to learning.

Information regarding The Honors College at OSU, and Scholar Development/Leadership Programs can be found on the Honors College tab in the left menu.

Scholarships

Numerous CEAT scholarships are funded through the generosity of alumni, private and corporate donations. Awards are available for undergraduate and graduate students at all levels and are granted based on academic achievement, campus involvement and leadership potential, as well as financial need. Freshmen and undergraduate transfer students are automatically considered for most CEAT scholarships, based off the student's eligibility through their OSU application and acceptance to OSU and CEAT, for priority scholarship consideration students should apply and be accepted to CEAT by November 1st. Student must be accepted by Feb. 1st for all other scholarship considerations. All CEAT scholarships are awarded on a competitive basis. Some scholarships require additional applications. Details can be found at http://ceat.okstate.edu/scholarships (http://ceat.okstate.edu/scholarships/).

Current undergraduate (continuing) students should submit applications for general CEAT scholarships online at http://ceat.okstate.edu/scholarships (http://ceat.okstate.edu/scholarships/).

Computing Requirements

For students in Engineering, Architecture and Technology, the college requires that all students have several basic tools. Students in the College must have a scientific calculator and a laptop computer. The scientific calculator should be capable of computing trigonometric functions, logarithmic and natural logarithmic functions, basic statistical analysis, and all algebraic functions. The laptop requirements are published at http://ceat-its.okstate.edu.

Academic Advising

The College's Office of Student Academic Services (http://studentservices.okstate.edu/) provides advisement for all CEAT freshman students except for those who are advised in their academic department. University College provides advisement through the Pre-CEAT program, for OSU students who do not meet the qualifications for enrollment in CEAT but wish to become qualified to enroll in a CEAT degree program in the future. Each student is personally advised in the planning and scheduling of his or her coursework, assisted with the selection of a major, and is counseled and advised individually on matters of career choice, activities at OSU and on other academic matters.

Each CEAT student, and his or her advisor, carefully selects general education, core engineering or architecture, and elective courses to meet the curriculum objectives and accreditation criteria. To assist students in planning and mapping their academic success, an electronic account is created for each student at the time of initial enrollment. Students have access to their personal account, via the STAR System, where they can review their advising materials, degree sheet, flowchart and other documents. The advisor assists the student with academic decisions and works to ensure accuracy and compliance; however, the ultimate responsibility for meeting degree requirements rests with the student.

Academic Areas

- Biosystems and Agricultural Engineering (p. 1526)
- Chemical Engineering (p. 1540)
- Civil and Environmental Engineering (p. 1549)
- Division of Engineering Technology (p. 1560)
  - Electrical Engineering Technology (p. 1573)
  - Mechanical Engineering Technology (p. 1606)
  - Construction Engineering Technology (p. 1555)

- Fire and Emergency Management Program (p. 1579)
- Fire Protection and Safety Engineering Technology (p. 1582)
- Electrical and Computer Engineering (p. 1565)
- Industrial Engineering and Management (p. 1587)
  - Engineering and Technology Management (p. 1578)
- Materials Science and Engineering (p. 1592)
- Mechanical and Aerospace Engineering (p. 1593)
- School of Architecture (p. 1611)

CEAT Dean's Office and CEAT Online Learning (p. 1538)

Undergraduate Programs

- Aerospace Engineering, BSAE (p. 1598)
- Architectural Engineering: Construction Project Management, BEN (p. 1616)
- Architectural Engineering: Mechanical, Electrical and Plumbing, BEN (p. 1618)
- Architectural Engineering: Structures, BEN (p. 1620)
- Architecture, BAR (p. 1625)
- Biosystems Engineering: Bioprocessing & Food Processing, BSBE (p. 1528)
- Biosystems Engineering: Biosystems Engineering, BSBE (p. 1530)
- Biosystems Engineering: Environmental and Natural Resources, BSBE (p. 1532)
- Biosystems Engineering: Machine Systems & Agricultural Engineering, BSBE (p. 1534)
- Biosystems Engineering: Pre-Medical, BSBE (p. 1536)
- Chemical Engineering, BSCH (p. 1542)
- Chemical Engineering: Biomedical/Biochemical, BSCH (p. 1544)
- Chemical Engineering: Pre-Medical, BSCH (p. 1546)
- Civil Engineering, BSCV (p. 1551)
- Civil Engineering: Environmental, BSCV (p. 1553)
- Computer Engineering, BSCP (p. 1569)
- Construction Engineering Technology: Building, BSET (p. 1556)
- Construction Engineering Technology: Heavy, BSET (p. 1558)
- Electrical Engineering Technology, BSET (p. 1574)
- Electrical Engineering Technology: Computer, BSET (p. 1576)
- Electrical Engineering, BSEE (p. 1571)
- Fire Protection and Safety Engineering Technology, BSET (p. 1584)
- Industrial Engineering and Management, BSIE (p. 1590)
- Mechanical Engineering Technology, BSET (p. 1609)
- Mechanical Engineering, BSME (p. 1600)
- Mechanical Engineering: Petroleum, BSME (p. 1602)
- Mechanical Engineering: Pre-Medical, BSME (p. 1604)

Minors

Undergraduate Minors

Contact the following individuals for additional information related to minors in their academic area.

Professor Suzanne Bilbeisi, suzanne.bilbeisi@okstate.edu, 101AK Donald W Reynolds Bldg, 405-744-9051

- Architectural Studies: Architecture and Entrepreneurship (ASAE), Minor (p. 1622)
- Architectural Studies: Design (ASDS), Minor (p. 1623)
- Architectural Studies: History and Theory (ASHT), Minor (p. 1624)

Professor Heather Yates, heather.yates@okstate.edu, Engineering North 517, 405-744-8710

- Construction (CNST), Minor (p. 1562)

Professor Sunderesh Heragu, sunderesh.heragu@okstate.edu, Engineering North 354, 405-744-6055

- Data Analytics for Engineers (DAEN), Minor (p. 1589)

Professor Haley Murphy, haley.c.murphy@okstate.edu, Engineering North 570B, 405-744-5638

- Emergency Management (EM), Minor (p. 1581)

Professor Virginia Charter, virginia.charter@okstate.edu, 545 Engineering North 405-744-5721

- Safety and Exposure Sciences (SAES), Minor (p. 1586)

Professor Young Chang, young.chang@okstate.edu, Engineering North Fifth Floor, 405-744-7019

- Mechatronic Engineering Technology for EET Students (EETM), Minor (p. 1563)
- Mechatronic Engineering Technology for MET Students (METM), Minor (p. 1564)

Professor Randy Seitsinger, randy.seitsinger@okstate.edu, 201 ATRC, 405-744-5140

- Nuclear Engineering (NENG), Minor (p. 1539)

Professor Prem Bikkina, prem.bikkina@okstate.edu (@okstate.edu), 420 Engineering North 405-744-5280

- Petroleum Engineering (PETE), Minor (p. 1548)

Graduate Programs

- Biosystems Engineering, MS/PhD (p. 1526)
- Chemical Engineering, MS/PhD (p. 1541)
- Civil Engineering, MS/PhD (p. 1549)
- Electrical Engineering, ME/MS/PhD (p. 1567)
  - Control Systems Option MS
  - Optics and Photonics Option MS
- Engineering and Technology Management, MS (p. 1578)
- Fire and Emergency Management Administration, MS/PhD (p. 1579)
- Fire Safety and Explosion Protection, MS (p. 1582)
- Industrial Engineering and Management, MS/PhD (p. 1588)
- Integrative Design of Building Envelope, Graduate Certificate (p. 2047)
- Materials Science and Engineering, MS/PhD (p. 1592)
- Mechanical and Aerospace Engineering, ME/MS/PhD (p. 1596) .
  - Unmanned Aerial Systems MS/PhD
- Petroleum Engineering, MS/PHD (p. 1521)

Biosystems and Agricultural Engineering

The Department of Biosystems and Agricultural Engineering is administered jointly by the Ferguson College of Agriculture and the College of Engineering, Architecture and Technology. Students interested in a degree in Biosystems Engineering may initially enroll through either college at which time they will be assigned a Biosystems Engineering advisor. The degree is accredited by the Engineering Accreditation Commission of ABET (see www.abet.org (http://www.abet.org/)) under criteria for biological engineering and similarly named programs.

Biosystems engineers are professionals who create and adapt engineering knowledge and technologies for the efficient and effective production, processing, storage, handling and distribution of food, feed, fiber and other biological products, while at the same time providing for a quality environment and preserving and protecting natural resources. Biosystems engineers directly address problems and opportunities related to food, water, energy and the environment—all of which are critical to the quality of life in our society. Subject-matter specialization is provided through the following five undergraduate option areas: general, bioprocessing and food processing, environment and natural resources, machine systems and pre-medical.

The Biosystems Engineering program is a comprehensive engineering program that includes math, physical and biological sciences, basic engineering sciences and specialty areas. The first two years involves a focus on the underlying biological, physical, chemical and mathematical principles of engineering, supplemented by appropriate general education courses in English, social sciences and humanities. The next two years builds systematically upon the scientific knowledge acquired in the early courses and students have the opportunity to focus on the option areas listed above.

Biosystems engineering courses integrate engineering sciences, physical sciences, and biological sciences, and teach students to address real-world challenges. With the guidance of experienced faculty, students work both as individuals and in teams to design creative solutions to complex problems. The coursework is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The coursework incorporates the social and economic aspects of technical problems, and stresses the responsibilities of engineering professionals to behave ethically and promote occupational and public safety. The program culminates in senior year design courses in which students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. At this point, students are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. The students have also developed and displayed the ability to conduct experiments essential to specific studies and to analyze the experimental results that lead to meaningful conclusions.

An integral part of this education continuum—from basic science through comprehensive engineering design—is learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. Moreover, the program provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students' experience in solving ever-more-challenging problems enables them to continue to learn independently throughout their professional careers.

The Biosystems Engineering program verifies that our students possess core engineering knowledge and capability by requiring students to take the Fundamentals of Engineering exam, which is an important step toward becoming a professional engineer. All candidates for the BS degree in Biosystems Engineering must take the Fundamentals of Engineering exam prior to receiving their degree.

The overall objective of the undergraduate Biosystems Engineering degree program is to provide the comprehensive education necessary to prepare students for successful, productive and rewarding careers in engineering for agricultural, food and biological systems.

Within a few years of graduation, Biosystems Engineering program graduates will become top professionals, managers or leaders in a wide variety of industries and organizations involved with biosystems engineering, where they apply discovery, problem solving, and leadership skills for the benefit of their organization and the society at large.

A wide variety of employment opportunities are available for biosystems engineers in industry, public service and education. Some of these opportunities include positions in governmental agencies, consulting engineering firms, and agricultural and food equipment industries. Biosystems engineers are employed throughout the U.S. as well as internationally.

Undergraduate Programs

- Biosystems Engineering: Bioprocessing & Food Processing, BSBE (p. 1528)
- Biosystems Engineering: Biosystems Engineering, BSBE (p. 1530)
- Biosystems Engineering: Environmental and Natural Resources, BSBE (p. 1532)
- Biosystems Engineering: Machine Systems & Agricultural Engineering, BSBE (p. 1534)
- Biosystems Engineering: Pre-Medical, BSBE (p. 1536)

Graduate Programs

BAE Graduate Programs (p. 1725)

The Department of Biosystems and Agricultural Engineering offers programs leading to the Master of Science and Doctor of Philosophy degrees in Biosystems Engineering. These degrees emphasize research and development.

Graduate Admission Requirements

Admission to either the Master of Science or Doctor of Philosophy degree program requires graduation from an engineering curriculum accredited by the ABET Engineering Accreditation Commission, http://www.abet.org (http://www.abet.org/). Students without accredited degrees may be admitted provisionally and may be required to take additional courses. A student must be accepted by an advisor in the department prior to official admission to the graduate program.

Excellent laboratory and computer facilities are available for students to explore research and design in such areas as bioprocessing and food engineering, machine vision, sensor and control technology, waste management and utilization, hydrology, water quality, porous media flow, and intelligent systems for agricultural machine design and production.

Research projects are supported by the Oklahoma Agricultural Experiment Station and by state, federal and private grants and contracts. Well-trained faculty members, many of whom are registered professional engineers with research, consulting and design experience, guide the graduate students' activities and plan programs to meet students' needs. Graduate students design experiments and special equipment to conduct their work. They are expected to demonstrate, by supporting research or by designs, the ability to identify a problem, define alternatives, propose a solution, organize a design or an experimental investigation, manage the project to completion and report the results through peer-reviewed papers and professional presentations.

Degree Requirements

A candidate for the graduate degrees listed above follows an approved plan of study which must satisfy at least the minimum University requirements for that particular degree.

Faculty

John N. Veenstra, PhD, PE, BCEE—Professor and Department Head
Professor Orville L. and Helen Buchanan Endowed Chair: Carol Jones, PhD, PE
Regents Professor/Director, Biobased Products and Energy Center: Raymond L. Huhnke, PhD, PE
Professor/Sarkey's Professor/Assistant Director and State Program Leader, Agricultural Natural Resources, Oklahoma Cooperative Extension Service: Randal K. Taylor, PhD, PE
Director, Capital Projects for CASNR/Assistant Director, Oklahoma Agricultural Experiment Station: Randy L. Raper, PhD, PE
Professors: Hasan Atiyeh, PhD, PE; Danielle D. Bellmer, PhD; Timothy J. Bowser, PhD, PE; Nurhan Dunford, PhD, PE; Ajay Kumar, PhD, PE; Dan Thomas, PhD, PE; Ning Wang, PhD, PE; Paul Weckler, PhD, PE
Associate Professors: Robert Scott Frazier, PhD, PE; Douglas W. Hamilton, PhD, PE; John Long, PhD, PE; Yu Mao, PhD; Saleh Taghvaeian, PhD
Adjunct Associate Professor: Derek Whitelock, PhD
Assistant Professors: Ali Mirchi, PhD
Adjunct Assistant Professor: Sherry L. Hunt, PhD
Research Associate Professor: J.D. Carlson, PhD
Assistant Extension Specialist: Wesley Lee, MS
Teaching Assistant Professor: Sara Alian, PhD

Biosystems Engineering: Bioprocessing & Food Processing, BSBE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
BIOL 1114	Introductory Biology (LN)	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Additional General Education		
Courses designated (A), (H), (N), or (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Mathematics		
MATH 2233	Differential Equations	3
Engineering & Engineering Science		
ENGR 1322	Engineering Design with CAD	2
or ENGR 1332	Engineering Design with CAD for MAE	
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
Biosystems Engineering		
BAE 1012	Introduction to Biosystems Engineering	2
BAE 1022	Experimental Methods in Biosystems Engineering	2
BAE 2013	Modeling in Biosystems Engineering	3
BAE 3033	Advanced Biology and Material Science of Biomaterials	3
Hours Subtotal		**38**
Major Requirements		
Common Professional School		
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
IEM 3503	Engineering Economic Analysis	3
BAE 3013	Heat and Mass Transfer in Biological Systems	3
BAE 3023	Instruments and Controls	3
BAE 3213	Energy and Power in Biosystems Engineering	3
BAE 4001	Professional Practice in Biosystems Engineering	1
BAE 4012	Senior Engineering Design Project I	2
BAE 4023	Senior Engineering Design Project II	3
Specific Professional School		
BAE 4283	Bioprocess Engineering	3
BAE 4413	Food Engineering	3
MICR 2123	Introduction to Microbiology	3
MICR 2132	Introduction to Microbiology Laboratory	2
BIOC 2344	Chemistry and Applications of Biomolecules	4
Hours Subtotal		**36**
Electives		
Select 8 hours of engineering and/or science electives to be selected from an approved list upon consultation with an advisor		8
Hours Subtotal		**8**
Total Hours		124

Other Requirements

- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- A grade of "C" or better is required in following courses: BAE 2013, BAE 3013, BAE 3023, BAE 3033, BAE 3213, ENSC 2113, ENSC 2143, ENSC 2213, ENSC 2613, ENSC 3233.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.

- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Biosystems Engineering: Biosystems Engineering, BSBE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 121

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
BIOL 1114	Introductory Biology (LN)	4
or PBIO 1404	Plant Biology (LN)	
Social & Behavioral Sciences (S)		
Any course designated (S)		3
Additional General Education		
Courses designated (A), (H), (N), or (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Mathematics		
MATH 2233	Differential Equations	3
Engineering & Engineering Science		
ENGR 1332	Engineering Design with CAD for MAE	2
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
Biosystems Engineering		
BAE 1012	Introduction to Biosystems Engineering	2
BAE 1022	Experimental Methods in Biosystems Engineering	2
BAE 2013	Modeling in Biosystems Engineering	3
BAE 3033	Advanced Biology and Material Science of Biomaterials	3
Hours Subtotal		**38**
Major Requirements		
Common Professional School		
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
IEM 3503	Engineering Economic Analysis	3
BAE 3013	Heat and Mass Transfer in Biological Systems	3
BAE 3023	Instruments and Controls	3
BAE 3213	Energy and Power in Biosystems Engineering	3
BAE 4001	Professional Practice in Biosystems Engineering	1
BAE 4012	Senior Engineering Design Project I	2
BAE 4023	Senior Engineering Design Project II	3
Specific Professional School		
BAE 3223	Principles of Agriculture and Off-Road Machinery	3
BAE 4224	Machinery for Production and Processing	4
ENSC 2123	Elementary Dynamics	3
BAE 4314	Design Hydrology	4
BAE 4283	Bioprocess Engineering	3
BAE 4413	Food Engineering	3
Hours Subtotal		**41**
Total Hours		121

Other Requirements

- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- A grade of "C" or better is required in following courses: BAE 2013, BAE 3013, BAE 3023, BAE 3033, BAE 3213, ENSC 2113, ENSC 2143, ENSC 2213, ENSC 2613, ENSC 3233.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.
- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Biosystems Engineering: Environmental and Natural Resources, BSBE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 123

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
BIOL 1114	Introductory Biology (LN)	4
or PBIO 1404	Plant Biology (LN)	
Social & Behavioral Sciences (S)		
Any course designated (S)		3
Additional General Education		
Courses designated (A), (H), (N), or (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Mathematics		
MATH 2233	Differential Equations	3
Engineering & Engineering Science		
ENGR 1322	Engineering Design with CAD	2
or ENGR 1332	Engineering Design with CAD for MAE	
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
Biosystems Engineering		
BAE 1012	Introduction to Biosystems Engineering	2
BAE 1022	Experimental Methods in Biosystems Engineering	2
BAE 2013	Modeling in Biosystems Engineering	3
BAE 3033	Advanced Biology and Material Science of Biomaterials	3
Hours Subtotal		**38**
Major Requirements		
Common Professional School		
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
IEM 3503	Engineering Economic Analysis	3
BAE 3013	Heat and Mass Transfer in Biological Systems	3
BAE 3023	Instruments and Controls	3
BAE 3213	Energy and Power in Biosystems Engineering	3
BAE 4001	Professional Practice in Biosystems Engineering	1
BAE 4012	Senior Engineering Design Project I	2
BAE 4023	Senior Engineering Design Project II	3
Specific Professional School		
BAE 4314	Design Hydrology	4
BAE 4324	Water Quality Engineering	4
CIVE 3833	Applied Hydraulics	3
GEOL 1114	Physical Geology (LN)	4
NREM 3013	Applied Ecology and Conservation	3
SOIL 2124	Fundamentals of Soil Science (N)	4
or CIVE 3714	Introduction to Geotechnical Engineering	
Hours Subtotal		**43**
Total Hours		123

Other Requirements

- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- A grade of "C" or better is required in following courses: BAE 2013, BAE 3013, BAE 3023, BAE 3033, BAE 3213, ENSC 2113, ENSC 2143, ENSC 2213, ENSC 2613, ENSC 3233.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.
- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Biosystems Engineering: Machine Systems & Agricultural Engineering, BSBE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
BIOL 1114	Introductory Biology (LN)	4
or PBIO 1404	Plant Biology (LN)	
Social & Behavioral Sciences (S)		
Any course designated (S)		3
Additional General Education		
Courses designated (A), (H), (N), or (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Mathematics		
MATH 2233	Differential Equations	3
Engineering & Engineering Science		
ENGR 1332	Engineering Design with CAD for MAE	2
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
Biosystems Engineering		
BAE 1012	Introduction to Biosystems Engineering	2
BAE 1022	Experimental Methods in Biosystems Engineering	2
BAE 2013	Modeling in Biosystems Engineering	3
BAE 3033	Advanced Biology and Material Science of Biomaterials	3
Hours Subtotal		**38**
Major Requirements		
Common Professional School		
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
IEM 3503	Engineering Economic Analysis	3
BAE 3013	Heat and Mass Transfer in Biological Systems	3
BAE 3023	Instruments and Controls	3
BAE 3213	Energy and Power in Biosystems Engineering	3
BAE 4001	Professional Practice in Biosystems Engineering	1
BAE 4012	Senior Engineering Design Project I	2
BAE 4023	Senior Engineering Design Project II	3
Specific Professional School		
BAE 3223	Principles of Agriculture and Off-Road Machinery	3
BAE 4224	Machinery for Production and Processing	4
ENSC 2123	Elementary Dynamics	3
ENSC 3313	Materials Science	3
SOIL 2124	Fundamentals of Soil Science (N)	4
Hours Subtotal		**38**
Electives		
Select 6 hours of engineering and/or science electives to be selected from an approved list upon consultation with an advisor		6
Hours Subtotal		**6**
Total Hours		124

Other Requirements

- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- A grade of "C" or better is required in the following courses: BAE 2013, BAE 3013, BAE 3023, BAE 3033, BAE 3213, ENSC 2113, ENSC 2143, ENSC 2213, ENSC 2613, ENSC 3233.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.

- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Biosystems Engineering: Pre-Medical, BSBE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 125

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN)	5
BIOL 1114	Introductory Biology (LN)	4
Social & Behavioral Sciences (S)		
Any course designated (S)		3
Additional General Education		
Courses designated (A), (H), (N), or (S)		3
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Mathematics		
MATH 2233	Differential Equations	3
Engineering & Engineering Science		
ENGR 1322	Engineering Design with CAD	2
or ENGR 1332	Engineering Design with CAD for MAE	
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
Biosystems Engineering		
BAE 1012	Introduction to Biosystems Engineering	2
BAE 1022	Experimental Methods in Biosystems Engineering	2
BAE 2013	Modeling in Biosystems Engineering	3
BAE 3033	Advanced Biology and Material Science of Biomaterials	3
Hours Subtotal		**38**
Major Requirements		
Common Professional School		
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
IEM 3503	Engineering Economic Analysis	3
BAE 3013	Heat and Mass Transfer in Biological Systems	3
BAE 3023	Instruments and Controls	3
BAE 3213	Energy and Power in Biosystems Engineering	3
BAE 4001	Professional Practice in Biosystems Engineering	1
BAE 4012	Senior Engineering Design Project I	2
BAE 4023	Senior Engineering Design Project II	3
Specific Professional School		
Select BAE 4000 level (Any Upper Level BAE Classes, at least 5 hours total)		5
CHEM 3053	Organic Chemistry I	3
CHEM 3153	Organic Chemistry II	3
CHEM 3112	Organic Chemistry Laboratory	2
MICR 2123	Introduction to Microbiology	3
BIOL 1604	Animal Biology	4
BIOC 3653	Survey of Biochemistry	3
or MICR 3033	Cell and Molecular Biology	
Hours Subtotal		**44**
Total Hours		125

Other Requirements

- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- A grade of "C" or better is required in following courses: BAE 2013, BAE 3013, BAE 3023, BAE 3033, BAE 3213, ENSC 2113, ENSC 2143, ENSC 2213, ENSC 2613, ENSC 3233.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.
- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

CEAT Dean's Office and CEAT Online Learning

CEAT Online Learning

The CEAT Online Learning office provides administrative and technological support along with specialized recording classrooms and a studio to enable CEAT faculty to offer high quality online courses. To learn more about CEAT Online Learning and see their contact information, please visit the CEAT Online Learning website (https://ceatonline.okstate.edu).

Courses are open to non-degree seeking students who meet the course prerequisites.

Nuclear Engineering Minor

Oklahoma State University is part of the University Engineering Alliance (UEA). The UEA is a partnership of eight universities that offers online graduate and undergraduate coursework in nuclear engineering.

To learn more about the UEA, please visit their website (http://www.universityengineeringalliance.org).

To declare the OSU Nuclear Engineering minor or enroll in UEA nuclear engineering classes, contact the CEAT Online Learning office.

Undergraduate Programs

- Nuclear Engineering (NENG), Minor (p. 1539)

Nuclear Engineering (NENG), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Randy Seitsinger, randy.seitsinger@okstate.edu, 201 ARTC, 405-744-5140

Minimum Overall Grade Point Average: 2.50 with a grade of "C" or better in each course submitted for the minor
Total Hours: 15 Hours (not including math and science prerequisites)

Code	Title	Hours
Minor Requirements		
PHYS 4663	Radioactivity and Nuclear Physics	3
or ENGR 4213	Elements of Nuclear Engineering	
Select 12 hours from below		12
PHYS 4010	Special Problems [1]	
MAE 4263	Energy Conversion Systems	
ENGR 4233	Energy Systems and Resources	
ENGR 4283	Science and Technology of Terrorism and Counterterrorism	
ENGR 4293	Nonproliferation: Issues for Weapons of Mass Destruction	
ENGR 4300	Nuclear Engineering Special Topics	
Total Hours		15

[1] PHYS 4010 must be Introduction to Health Physics, Nuclear Reactor Theory, or other approved PHYS 4010

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Chemical Engineering

Chemical engineers use knowledge of how nature works (science) and the language of science (mathematics) to create value and solve difficult problems for the benefit of society. The key skill that differentiates chemical engineering from other disciplines is the ability to understand, design and operate transformation (physical or chemical) processes. Chemical engineers literally change (transform) the world. Many in the public assume chemical engineers work only in chemical plants and petroleum refineries. The reality is that chemical engineers work in a broad range of industries including pharmaceuticals, biochemicals, semiconductor materials, foods, plastics, paper, steel, consumer goods, automotive, specialty materials, oil & gas production, renewable energy, engineering services, and the list goes on. Key to providing a benefit to society, chemical engineers are responsible for resource conservation, minimizing pollution, minimizing costs, and maximizing quality and safety of processes that make the products.

The emphasis on the molecular or chemical nature of everything people use is what makes chemical engineers different from other engineers. The emphasis on the processes that make the products is what makes chemical engineers different from chemists.

Chemical engineers often find themselves defining a problem or product, developing a process to do what is needed, and then designing the equipment to carry out the process. After the installation, chemical engineers commonly manage operations, oversee equipment maintenance and supervise control of product quality. They trouble-shoot problems that hinder smooth operations, and they plan for future expansions or improvements. Their training and knowledge make them well qualified to market products and processing equipment. The varied background and experience of chemical engineers make them ideally suited for advancement into top-level managerial and executive positions. An advanced degree in chemical engineering is not required.

Many who aspire to careers in medicine or law first obtain BS degrees in chemical engineering. The rigor of the program and the emphasis on critical thinking and analytical reasoning are highly valued by professional school admission committees. A career as a research scientist or academic typically requires a PhD degree.

Program Educational Objectives

The School has three broad objectives. Within the first few years after graduation, our BS graduates will have demonstrated:

1. Competencies – skill in tools and techniques that are fundamental to the job, many of which need to be learned after graduation.
2. Professionalism – partnership in the mission and within the human context of the enterprise - ethics, effectiveness, and awareness of the broad context of the detailed work.
3. Balance – a wise self-direction to life, community, health and self-view that finds the right balance between personal choices, which energizes self and others and enables effectiveness in relationships with others.

The goal of the BS degree program is to produce graduates who possess broad-based knowledge, skills and judgment that prepares them to succeed in the profession of engineering or in further studies at the graduate level, including medical school. To achieve this goal, the program is designed to progressively develop both technical and human skills.

In the pre-professional portion, the first two years of study of in the chemical engineering program (usually equivalent to two years of study), the focus is on the underlying scientific and mathematical principles of engineering, supplemented by appropriate general education courses in English, social sciences and humanities. Students who demonstrate proficiency in this portion of the program are eligible for admission to the professional school.

The curriculum in the professional school (typically the last two years) of study builds systematically upon the scientific knowledge acquired in the pre-professional, primary curriculum. The students have the opportunity to focus in one of three emphasis areas:

1. the regular course prepares a graduate for a wide range of employment opportunities;
2. the pre-medical option is for those who wish preparation for medical school; and
3. the biomedical/biochemical option is for those who seek employment in bio-related professions.

Each emphasis area is accredited under the basic level EAC-ABET criteria for chemical engineering programs and each prepares a student for success in both employment and graduate study at OSU or other universities. A more complete description of exact degree requirements for the bachelor's-level curricula is given in the publication Undergraduate Programs and Requirements at OSU.

Each of the three chemical engineering emphasis areas professional school course builds upon the preceding chemical engineering courses to develop the ability to identify and solve meaningful engineering problems. The coursework is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The coursework includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in the senior-year design courses in which the students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. At this point, students will be able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. The students will have developed and displayed the ability to design and conduct experiments essential to specific studies, and to analyze the experimental results and draw meaningful conclusions within an enterprise context.

Integral parts of this educational continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students' abilities to function effectively in both individual and collaborative environments. To achieve this, the program provides every student with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and utilized as a part of their problem-solving experiences. Finally, the students' experience in solving ever-more-challenging problems gives them the ability to continue to learn independently throughout their professional careers.

Undergraduate Programs

- Chemical Engineering, BSCH (p. 1542)
- Chemical Engineering: Biomedical/Biochemical, BSCH (p. 1544)
- Chemical Engineering: Pre-Medical, BSCH (p. 1546)

- Petroleum Engineering (PETE), Minor (p. 1548)

Graduate Programs

The School of Chemical Engineering offers programs leading to the Master of Science and Doctor of Philosophy. A program of independent study and research on a project under the direction of a member of the Graduate Faculty will be satisfactorily completed by all graduate students. For the Master of Science candidate, the project may result in a thesis. For the Doctor of Philosophy candidate, the project will result in his or her dissertation.

Admission Requirements

Admission to either the Master of Science or Doctor of Philosophy degree program requires graduation from a chemical engineering curriculum approved by the ABET or a recognized equivalent from any international program.

Students with related undergraduate degrees, such as chemistry, automation engineering, etc., can be admitted conditionally, subject to completing prescribed undergraduate Chemical Engineering program courses. Admission is competitive based on undergraduate GPA, GRE and TOEFL (for international students), statement of interests, experience and recommendations.

The Master of Science Degree

Two options are offered for this degree, Research-Oriented and Practice-Oriented options. General requirements for the Research-Oriented MS degree in chemical engineering are 30 credit hours of work beyond the BS degree and an acceptable thesis. At least 18 hours must be in classwork and a minimum of six hours of credit is required for thesis research. The general requirements for the Practice-Oriented MS degree are 32 credit hours of work beyond the BS, including two hours of credit assigned to an acceptable technical report. For both options, the courses taken must include:

Code	Title	Hours
CHE 5123	Advanced Chemical Reaction Engineering	3
CHE 5213	Advanced Transport Phenomena	3
CHE 5743	Chemical Engineering Process Modeling	3
CHE 5843	Principles of Chemical Engineering Thermodynamics	3

The Doctor of Philosophy Degree

The general credit requirement is a minimum of 90 credit hours beyond the BS degree, including at least 36 hours of credit for research and at least 30 hours of classwork. The courses must include:

Code	Title	Hours
CHE 5123	Advanced Chemical Reaction Engineering	3
CHE 5213	Advanced Transport Phenomena	3
CHE 5743	Chemical Engineering Process Modeling	3
CHE 5843	Principles of Chemical Engineering Thermodynamics	3
CHE 6703	Research Methods in Chemical Engineering	3

Each student is responsible for consultation with his or her advisory committee in preparing the study plan.

Faculty

Geir Hareland, PhD, PEng—Professor and Head
Professor and Continental Resources Chair: Geir Hareland, PhD, PEng
Professor and Anadarko Chair: Heather D.N. Fahlenkamp, PhD
Professor and BP Faculty Fellow: Sundar V. Madihally, PhD
Professors: D. Alan Tree, PhD; Jeffery L. White, PhD
Associate Professor and Harold Courson Faculty Fellow: Clint P. Aichele, PhD
Associate Professor and Robert N. Maddox Fellow: Joshua D. Ramsey, PhD, PE
Associate Professor and Samson Chair in Petroleum Engineering: Mileva Radonjic, PhD
Assistant Professors: Mohammed Al Dushaishi, PhD, Marimuthu Andiappan, PhD; Prem L. Bikkina, PhD; Ömer Özgür Çapraz, PhD; Yu Feng, PhD; Shohreh Hemmati, PhD; Seok-Jhin Kim, PhD; Jindal K. Shah, PhD; Ashlee Ford Versypt, PhD,
Clinical Assistant Professor (ENDEAVOR): Brad Rowland, PhD

Chemical Engineering, BSCH

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 130

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN)	5
PHYS 2014	University Physics I (LN)	4
Social & Behavioral Sciences (S)		
Any course designated (S)		6
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2114	University Physics II (LN)	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 2213	Thermodynamics	3
ENSC 3233	Fluid Mechanics	3
ENSC 3313	Materials Science	3
Mathematics		
Select one of the following:		3
STAT 2013	Elementary Statistics (A)	
STAT 2023	Elementary Statistics for Business and Economics (A)	
STAT 2053	Elementary Statistics for the Social Sciences (A)	
STAT 4013	Statistical Methods I (A)	
STAT 4033	Engineering Statistics	
STAT 4053	Statistical Methods I for the Social Sciences (A)	
STAT 4073	Engineering Statistics with Design of Experiments	
Chemistry		
CHEM 3053	Organic Chemistry I	3
Select one of the following:		5
CHEM 3153 & CHEM 3112	Organic Chemistry II and Organic Chemistry Laboratory	
BIOC 3653 & BIOC 3723	Survey of Biochemistry and Biochemistry and Molecular Biology Laboratory	
Hours Subtotal		**36**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
or MATH 3263	Linear Algebra and Differential Equations	
Chemistry		
CHEM 3433	Physical Chemistry I	3
Chemical Engineering		
CHE 2033	Introduction to Chemical Process Engineering	3
CHE 2581	Chemical Engineering Seminar I	1
CHE 3013	Rate Operations I	3
CHE 3113	Rate Operations II	3
CHE 3123	Chemical Reaction Engineering	3
CHE 3333	Introduction to Transport Phenomena	3
CHE 3473	Chemical Engineering Thermodynamics	3
CHE 3581	Chemical Engineering Seminar II	1
CHE 4002	Chemical Engineering Laboratory I	2
CHE 4112	Chemical Engineering Laboratory II	2
CHE 4124	Chemical Engineering Design I	4
CHE 4224	Chemical Engineering Design II	4
CHE 4581	Chemical Engineering Seminar III	1
CHE 4843	Chemical Process Instrumentation and Control	3
Hours Subtotal		**42**
Controlled Electives		
Advanced Chemical Science		
Select 3 hours of the following:		3

ANSI 3423	Animal Genetics [1]	
BIOC 3223	Physical Chemistry for Biologists	
BIOC 3653	Survey of Biochemistry [1]	
BIOC 3713	Biochemistry I [1]	
BIOC 3723	Biochemistry and Molecular Biology Laboratory	
BIOC 4113	Molecular Biology	
BIOL 3023	General Genetics [1]	
CHEM 3153	Organic Chemistry II	
CHEM 3353	Descriptive Inorganic Chemistry	
CHEM 3553	Physical Chemistry II	
CHEM 4023	Modern Methods of Chemical Analysis	
FDSC 3373	Food Chemistry I	
FDSC 4373	Food Chemistry II	
GEOL 4403	Geochemistry	
MICR 3033	Cell and Molecular Biology	
Restricted Electives		
Select 6 hours of upper-level course credit meeting School objectives [1, 2]		6
Hours Subtotal		**9**
Total Hours		130

1. Cannot use both ANSI 3423 Animal Genetics & BIOL 3023 General Genetics or BIOC 3653 Survey of Biochemistry & BIOC 3713 Biochemistry I.
2. Must be 3000 level or higher. Must meet requirements for professional development, technical knowledge, or life balance. May be fulfilled by upper-division coursework as part of the pursuit of a minor at OSU.

Graduation Requirements

1. A minimum GPA of 2.00 is required in all CHE coursework.
2. Must Receive a "C" or better in the following CHE courses: CHE 2033, CHE 3013, CHE 3113, CHE 3123, CHE 3333, CHE 3473, and CHE 4002.
3. The major engineering design experience, capstone course, is satisfied by CHE 4124 Chemical Engineering Design I and CHE 4224 Chemical Engineering Design II.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Chemical Engineering: Biomedical/ Biochemical, BSCH

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 134

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
PHIL 3833	Biomedical Ethics (H) (or equivalent with Chemical Engineering Advisor approval)	3
Select 3 hour course designated (H)		3
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN)	5
BIOL 1114	Introductory Biology (LN)	4
Social & Behavioral Sciences (S)		
Any course designated (S)		6
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 2213	Thermodynamics	3
ENSC 3233	Fluid Mechanics	3
ENSC 3313	Materials Science	3
Mathematics		
Select one of the following:		3
STAT 2013	Elementary Statistics (A)	
STAT 2023	Elementary Statistics for Business and Economics (A)	
STAT 2053	Elementary Statistics for the Social Sciences (A)	
STAT 4013	Statistical Methods I (A)	
STAT 4033	Engineering Statistics	
STAT 4053	Statistical Methods I for the Social Sciences (A)	
STAT 4073	Engineering Statistics with Design of Experiments	
Chemistry		
CHEM 3053	Organic Chemistry I	3
Select one of the following:		5
CHEM 3153 & CHEM 3112	Organic Chemistry II and Organic Chemistry Laboratory	
BIOC 3653 & BIOC 3723	Survey of Biochemistry and Biochemistry and Molecular Biology Laboratory	
Hours Subtotal		**40**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
or MATH 3263	Linear Algebra and Differential Equations	
Chemistry		
CHEM 3433	Physical Chemistry I	3
Chemical Engineering		
CHE 2033	Introduction to Chemical Process Engineering	3
CHE 2581	Chemical Engineering Seminar I	1
CHE 3013	Rate Operations I	3
CHE 3113	Rate Operations II	3
CHE 3123	Chemical Reaction Engineering	3
CHE 3333	Introduction to Transport Phenomena	3
CHE 3473	Chemical Engineering Thermodynamics	3
CHE 3581	Chemical Engineering Seminar II	1
CHE 4002	Chemical Engineering Laboratory I	2
CHE 4112	Chemical Engineering Laboratory II	2
CHE 4124	Chemical Engineering Design I	4
CHE 4224	Chemical Engineering Design II	4
CHE 4581	Chemical Engineering Seminar III	1
CHE 4843	Chemical Process Instrumentation and Control	3

Hours Subtotal		**42**
Controlled Electives		
Advanced Chemical Science		
Select 3 hours		3
ANSI 3423	Animal Genetics [1]	
BIOC 3223	Physical Chemistry for Biologists	
BIOC 3653	Survey of Biochemistry [1]	
BIOC 3713	Biochemistry I [1]	
BIOC 3723	Biochemistry and Molecular Biology Laboratory	
BIOC 4113	Molecular Biology	
BIOL 3023	General Genetics [1]	
CHEM 3153	Organic Chemistry II	
CHEM 3353	Descriptive Inorganic Chemistry	
CHEM 3553	Physical Chemistry II	
CHEM 4023	Modern Methods of Chemical Analysis	
FDSC 3373	Food Chemistry I	
FDSC 4373	Food Chemistry II	
GEOL 4403	Geochemistry	
MICR 3033	Cell and Molecular Biology	
Bioengineering/Bioscience Electives		
Select 6 hours of the following:		6
BAE 3113	Biological Applications in Engineering	
BAE 4413	Food Engineering	
BIOC 3223	Physical Chemistry for Biologists	
BIOC 3653	Survey of Biochemistry [1]	
BIOC 3713	Biochemistry I [1]	
BIOC 3723	Biochemistry and Molecular Biology Laboratory	
BIOC 4113	Molecular Biology	
BIOC 5824	Biochemical Laboratory Methods	
BIOL 1604	Animal Biology	
BIOL 3023	General Genetics	
CHE 4283	Bioprocess Engineering	
CHE 4293	Biomedical Engineering	
CHE 5283	Advanced Bioprocess Engineering	
CHE 5293	Advanced Biomedical Engineering	
MICR 2123 & MICR 2132	Introduction to Microbiology and Introduction to Microbiology Laboratory	
MICR 3033	Cell and Molecular Biology	
Hours Subtotal		**9**
Total Hours		134

[1] Cannot use both ANSI 3423 Animal Genetics & BIOL 3023 General Genetics or BIOC 3653 Survey of Biochemistry & BIOC 3713 Biochemistry I.

Graduation Requirements

1. A minimum GPA of 2.00 is required in all CHE coursework.
2. Must Receive a "C" or better in the following CHE courses: CHE 2033, CHE 3013, CHE 3113, CHE 3123, CHE 3333, CHE 3473, and CHE 4002.
3. The major engineering design experience, capstone course, is satisfied by CHE 4124 Chemical Engineering Design I and CHE 4224 Chemical Engineering Design II.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Chemical Engineering: Pre-Medical, BSCH

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 135

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
Humanities (H)		
Any course designated (H) [1]		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN)	5
BIOL 1114	Introductory Biology (LN)	4
Social & Behavioral Sciences (S)		
Any course designated (S) [2]		6
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
BIOL 1604	Animal Biology	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 2213	Thermodynamics	3
ENSC 3233	Fluid Mechanics	3
ENSC 3313	Materials Science	3
Chemistry		
CHEM 3053	Organic Chemistry I	3
CHEM 3112	Organic Chemistry Laboratory	2
CHEM 3153	Organic Chemistry II	3
Hours Subtotal		**41**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
or MATH 3263	Linear Algebra and Differential Equations	
Select one of the following:		3
STAT 2013	Elementary Statistics (A)	
STAT 2023	Elementary Statistics for Business and Economics (A)	
STAT 2053	Elementary Statistics for the Social Sciences (A)	
STAT 4013	Statistical Methods I (A)	
STAT 4033	Engineering Statistics	
STAT 4053	Statistical Methods I for the Social Sciences (A)	
STAT 4073	Engineering Statistics with Design of Experiments	
Chemistry		
CHEM 3433	Physical Chemistry I	3
Chemical Engineering		
CHE 2033	Introduction to Chemical Process Engineering	3
CHE 2581	Chemical Engineering Seminar I	1
CHE 3013	Rate Operations I	3
CHE 3113	Rate Operations II	3
CHE 3123	Chemical Reaction Engineering	3
CHE 3333	Introduction to Transport Phenomena	3
CHE 3473	Chemical Engineering Thermodynamics	3
CHE 3581	Chemical Engineering Seminar II	1
CHE 4002	Chemical Engineering Laboratory I	2
CHE 4112	Chemical Engineering Laboratory II	2
CHE 4124	Chemical Engineering Design I	4
CHE 4224	Chemical Engineering Design II	4
CHE 4581	Chemical Engineering Seminar III	1
CHE 4843	Chemical Process Instrumentation and Control	3
Hours Subtotal		**45**
Controlled Electives		
Advanced Chemical Science		
BIOL 3023	General Genetics	3

or MICR 3033	Cell and Molecular Biology	
Bioengineering/Bioscience Electives		
Select 3 hours of the following:		3
BAE 3113	Biological Applications in Engineering	
BAE 4413	Food Engineering	
BIOC 3223	Physical Chemistry for Biologists	
BIOC 3713	Biochemistry I	
BIOC 3653	Survey of Biochemistry	
BIOC 4113	Molecular Biology	
BIOL 3023	General Genetics	
BIOL 3214	Human Anatomy	
CHE 4283	Bioprocess Engineering	
CHE 4293	Biomedical Engineering	
CHE 5283	Advanced Bioprocess Engineering	
CHE 5293	Advanced Biomedical Engineering	
Hours Subtotal		**6**
Total Hours		135

[1] Humanities courses - should select one from ENGL and one ART, ENGL, FLL, MUSI, PHIL or TH to also meet medical school requirements.

[2] Social & Behavioral Sciences courses – should select from ANTH, PSYC, or SOC to also meet medical school requirements.

Graduation Requirements

1. A minimum GPA of 2.00 is required in all CHE coursework.
2. Must Receive a "C" or better in the following CHE courses: CHE 2033, CHE 3013, CHE 3113, CHE 3123, CHE 3333, CHE 3473, and CHE 4002.
3. The major engineering design experience, capstone course, is satisfied by CHE 4124 Chemical Engineering Design I and CHE 4224 Chemical Engineering Design II.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Petroleum Engineering (PETE), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Professor Prem Bikkina, prem.bikkina@okstate.edu (@okstate.edu), 420 Engineering North 405-744-5280

Minimum Overall Grade Point Average: 2.50
Total Hours: 18 hours

Code	Title	Hours
Minor Requirements		
GEOL 3413	Petroleum Geology for Engineers	3
GEOL 4323	Applied Well Log Analysis for Engineers	3
PETE 4303	Petroleum Rocks and Fluids	3
PETE 4313	Drilling and Well Completions	3
PETE 4333	Production Engineering	3
PETE 4343	Reservoir Engineering and Well Testing	3
Total Hours		18

GEOL 3413 Petroleum Geology for Engineers is a prerequisite for all other courses. PETE 4303 Petroleum Rocks and Fluids is a prerequisite for PETE 4313 Drilling and Well Completions, PETE 4333 Production Engineering and PETE 4343 Reservoir Engineering and Well Testing.

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Civil and Environmental Engineering

Civil engineers build the future. The exceptional diversity of professional practice in civil and environmental engineering presents many career opportunities for students.

The concern of civil engineers is infrastructure - the design, construction, management, alteration and utilization, which allows society to function. Civil engineers plan, design and construct, highways, waterway and railway systems, harbors and shipping facilities, systems for the treatment and distribution of water and for the collection and treatment of municipal and industrial waste, dams and hydroelectric works, airports and terminals, structures of every kind including buildings, bridges, towers, industrial plants, tunnels and subway systems, processes for the control of water and air pollution, and many other works of general benefit to society.

The curriculum in civil engineering is based on courses in mathematics, physical sciences and engineering sciences. On this foundation, required courses equip the student with the basic skills needed for the professional practice of civil engineering and provide the tools for more advanced study. Engineering theory and principles are developed in a way that will encourage their application to the practical solution of problems.

Program Educational Objectives

The Bachelor of Science in Civil Engineering degree program educates and prepares engineers who a few years after graduation will be:

- Contributing to society through the practice of civil engineering in a variety of contexts, including the protection of public health, safety, and welfare and the development of sustainable engineering solutions;
- Effectively applying and adapting the technical knowledge, engineering principles, communication skills and personal attributes necessary to be successful in the civil engineering profession;
- Advancing within their profession, including attaining professional licensure and positions of leadership; and
- Exhibiting life-long learning, including the pursuit of advanced degrees.
- Engaging with and advocating for the civil engineering profession.

The curriculum is designed to enable students to satisfy the program educational objectives in conjunction with the student outcomes. These outcomes state that graduates of the program will have:

(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

The School provides a curriculum that is effective and balanced among the major areas of civil engineering practice. Design capabilities are developed throughout the curriculum, culminating in a comprehensive senior design experience, incorporating much of the previous coursework. Some degree of specialization is provided through the choice of elective courses in structures, engineering mechanics, transportation engineering, soil mechanics and foundations, construction engineering and management, environmental engineering and water resources. There is a designated option for those students wishing to concentrate more heavily in the environmental area of practice. Program curricula requirements are outlined in the publication Undergraduate Program and Requirements. The general civil option and the environmental option are accredited by the Engineering Accreditation Commission of the ABET under the criteria for civil and similarly named engineering programs.

Undergraduate Programs

- Civil Engineering, BSCV (p. 1551)
- Civil Engineering: Environmental, BSCV (p. 1553)

Graduate Programs

The School of Civil and Environmental Engineering offers three programs leading to post-baccalaureate degrees—the Master of Science degree in civil engineering, the Master of Science degree in environmental engineering and the Doctor of Philosophy degree. The Master of Science degree is characterized by a technical specialization in a particular area of study. The Doctor of Philosophy degree is designed to prepare students for research and for the teaching profession in engineering.

Major areas of study in the School are applied mechanics, structural analysis, design, transportation, materials, construction engineering and management, geotechnical engineering, water resources and environmental engineering. Research in all major fields is continuously pursued. Master of Science in Civil Engineering candidates may choose either to specialize or to engage in a broadly based program of study, in accordance with an approved and purposeful plan of study.

Admission Requirements

Candidates for the Master of Science or Doctor of Philosophy degree should have graduated from a civil engineering curriculum accredited by ABET. Graduates from other curricula and schools should submit transcripts to the head of the School of Civil and Environmental Engineering for evaluation. Admission to the Master of Science in environmental engineering degree program is permitted for students who meet the minimum prerequisites as established by the School of Civil and Environmental Engineering.

Degree Requirements

All degree programs follow an approved plan of study that must be submitted at a designated time. All programs are characterized by

the flexibility available in a study plan that is designed to satisfy the particular needs of the student, while conforming to the general requirements implied by the title of the degree and specified by the University.

The Master of Science degree in either civil or environmental engineering requires the completion of at least 30 credit hours beyond the bachelor's degree, including a research thesis for which no more than six credit hours may be granted. The non-thesis option (32 credit hours) described in the Graduate College section may be permitted at the discretion of the student's advisory committee.

The Doctor of Philosophy degree requires the completion of at least 90 credit hours of coursework beyond the bachelor's degree, including not more than 30 credit hours for the research thesis. In addition, the candidate must meet the equivalency of the language requirement (six hours) in selected areas at the discretion of his or her committee to facilitate his or her research. Generally, official admission as a candidate for the Doctor of Philosophy degree in any program offered by the School will not be granted until a member of the Graduate Faculty in the School agrees to serve as major (or thesis) advisor for the prospective candidate.

Faculty

Professor and M. R. Lohmann Chair: Norbert (Norb) Delatte, PhD, PE, F.ASCE, F.ACI
Dean, College of Engineering, Architecture and Technology, Professor and Donald & Cathey Humphreys Chair: Paul J. Tikalsky, PhD, PE, F.ASCE, F.ACI
Professor and Gilbert, Cooper, W&W Steel Chair: Tyler Ley, PhD, PE, F.ACI
Professor and Decker Dawson Chair: C. (Kelvin) Wang, PhD, PE
Professors: S.A. Ahmed, PhD, PE; Gouranga Banik, PhD, PE, F.ASCE; RIfat Bulut, PhD; Stephen A. Cross, PhD, PE; John N. Veenstra, PhD, PE
Associate Professors: Robert Emerson, PhD, PE; Mark Krzmarzick, PhD, PE; Debakanta (Deb) Mishra, Ph.D., P.E.; Bruce Russell, PhD, PE; Gregory G. Wilber, PhD, PE
Assistant Professors: Julie Hartell, PhD; David Lampert, PhD, PE; Qiang (Joshua) Li, PhD, PE; Yong Wei Shan, PhD, PE; Mohamad Soliman, PhD
Adjunct Professors: Garry Gregory, PhD, PE; Boris Dan Hernandez, PhD; Enos Stover, PhD, PE; Brian Wintle, PhD, PE
Lecturer: Joe Echelle

Civil Engineering, BSCV

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 128

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
or ENGL 1213	Composition II	
or ENGL 1413	Critical Analysis and Writing II	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course.		
CHEM 1414	General Chemistry for Engineers (LN) [1]	4
or CHEM 1515	Chemistry II (LN)	
BIOL 1114	Introductory Biology (LN)	4
or GEOL 1114	Physical Geology (LN)	
PHYS 2014	University Physics I (LN)	4
Social & Behavioral Sciences (S)		
SPCH 2713	Introduction to Speech Communication (S)	3
Hours Subtotal		**40**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan.		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Mathematics		
MATH 2163	Calculus III	3
Basic Science		
CIVE 2081	Environmental Chemistry for Engineers [1]	1
PHYS 2114	University Physics II (LN)	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1322	Engineering Design with CAD	2
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2123	Elementary Dynamics	3
ENSC 2143	Strength of Materials	3
ENSC 2141	Strength of Materials Lab	1
Civil Engineering		
CIVE 2041	Civil and Environmental Engineering Seminar	1
CIVE 3614	Engineering Surveying	4
CIVE 3813	Environmental Engineering Science	3
Hours Subtotal		**31**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
Engineering Science		
ENSC 3233	Fluid Mechanics	3
ENSC 3231	Fluids and Hydraulics Lab	1
Civil Engineering		
CIVE 3413	Structural Analysis	3
CIVE 3513	Structural Steel Design	3
CIVE 3523	Reinforced Concrete Design	3
CIVE 3623	Engineering Materials Laboratory	3
CIVE 3633	Transportation Engineering	3
CIVE 3714	Introduction to Geotechnical Engineering	4
CIVE 3833	Applied Hydraulics	3
CIVE 3843	Hydrology I	3
CIVE 4041	Engineering Practice	1
CIVE 4043	Senior Design	3
CIVE 4273	Construction Engineering and Project Management	3
CIVE 4833	Unit Operations in Environmental Engineering	3
Industrial Engineering & Management		
IEM 3503	Engineering Economic Analysis	3
Hours Subtotal		**48**
Electives		
Select 9 hours of the following:		9
CIVE 4010	Civil Engineering Research	
CIVE 4013	Aquatic Chemistry	
CIVE 4033	GIS Applications for Water Resources	
CIVE 4050	Special Topics in Civil & Environmental Engineering	
CIVE 4103	Construction Simulation	
CIVE 4113	Construction Business Management	
CIVE 4123	The Legal & Regulatory Environment of Civil Engineering	
CIVE 4133	Construction Contracts and Specifications	
CIVE 4153	Contract Administration	
CIVE 4163	Construction Equipment Management	

CIVE 4183	Construction Estimating
CIVE 4193	BIM for Construction
CIVE 4243	Use and Design of Geosynthetics
CIVE 4283	Numerical Methods in Geotechnical Engineering
CIVE 4293	Design and Analysis of Earth Retaining Structures
CIVE 4303	Systems Analysis for Civil Engineers
CIVE 4313	Highway Traffic Operations
CIVE 4323	Civil Infrastructure Systems
CIVE 4343	Urban Transportation Planning
CIVE 4363	Design and Planning of Airports
CIVE 4373	Design of Traffic Control Systems
CIVE 4383	Geometric Design of Highways
CIVE 4403	Advanced Strength of Materials
CIVE 4413	Advanced Structural Analysis
CIVE 4513	Advanced Reinforced Concrete Design
CIVE 4523	Advanced Steel Structure Design
CIVE 4533	Prestressed Concrete
CIVE 4563	Structural Dynamics
CIVE 4573	Timber Design
CIVE 4653	Asphalt Materials and Mix Design
CIVE 4673	Concrete Materials and Mix Design
CIVE 4693	Pavement Design and Analysis
CIVE 4723	Foundation Engineering
CIVE 4733	Soil Mechanics
CIVE 4773	Soil-Structure Interaction
CIVE 4743	Project Engineering and Management
CIVE 4753	Engineering Soil Stabilization
CIVE 4873	Air Pollution Control Engineering
CIVE 4863	Advanced Unit Operations in Environmental Engineering
CIVE 4913	Groundwater Hydrology
CIVE 4923	Environ Risk Assessment
CIVE 4933	Water Treatment
CIVE 4943	Risk and Failure Analysis of Dams
CIVE 4983	Residuals & Solid Waste Management
CIVE 4963	Open Channel Flow
CIVE 4973	Concrete Durability
ENGR 4043 or ENGR 4060 may be used as one of the CIVE electives.	
Hours Subtotal	**9**
Total Hours	128

[1] Chem 1515 fulfills the requirements for both CHEM 1414 and CIVE 2081.

Other Requirements

Graduation Requirements

1. A minimum 2.00 Technical GPA. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonding to the degree program, or substitutions for these courses.
2. A 'C' or better is required in all CIVE, ENSC, and Math prefixed courses required in the degree.
3. If "B" or higher is not earned in ENGL 1113 Composition I, then ENGL 1213 Composition II must be completed.
4. The major engineering design experience, capstone course, is satisfied by CIVE 4043 Senior Design.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Civil Engineering: Environmental, BSCV

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 128

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
or ENGL 1213	Composition II	
or ENGL 1413	Critical Analysis and Writing II	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course.		
CHEM 1414	General Chemistry for Engineers (LN) [1]	4
or CHEM 1515	Chemistry II (LN)	
BIOC 2344	Chemistry and Applications of Biomolecules	4
or BIOL 1114	Introductory Biology (LN)	
PHYS 2014	University Physics I (LN)	4
Social & Behavioral Sciences (S)		
SPCH 2713	Introduction to Speech Communication (S)	3
Hours Subtotal		**40**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan.		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Mathematics		
MATH 2163	Calculus III	3
Basic Science		
PHYS 2114	University Physics II (LN)	4
CIVE 2081	Environmental Chemistry for Engineers [1]	1
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1322	Engineering Design with CAD	2
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2123	Elementary Dynamics	3
ENSC 2143	Strength of Materials	3
ENSC 2141	Strength of Materials Lab	1
Civil Engineering		
CIVE 2041	Civil and Environmental Engineering Seminar	1
CIVE 3614	Engineering Surveying	4
CIVE 3813	Environmental Engineering Science	3
Hours Subtotal		**31**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
STAT 4033	Engineering Statistics	3
or STAT 4073	Engineering Statistics with Design of Experiments	
Engineering Science		
ENSC 3233	Fluid Mechanics	3
ENSC 3231	Fluids and Hydraulics Lab	1
Civil Engineering		
CIVE 3413	Structural Analysis	3
CIVE 3523	Reinforced Concrete Design	3
CIVE 3853	Environmental Engineering Laboratory	3
CIVE 3623	Engineering Materials Laboratory	3
CIVE 3633	Transportation Engineering	3
CIVE 3714	Introduction to Geotechnical Engineering	4
CIVE 3833	Applied Hydraulics	3
CIVE 3843	Hydrology I	3
CIVE 4041	Engineering Practice	1
CIVE 4143	Environmental Engineering Design	3
CIVE 4273	Construction Engineering and Project Management	3
CIVE 4833	Unit Operations in Environmental Engineering	3
Industrial Engineering & Management		
IEM 3503	Engineering Economic Analysis	3
Hours Subtotal		**48**
Electives		
Select 9 hours of the following:		9
CIVE 4010	Civil Engineering Research	
CIVE 4013	Aquatic Chemistry	
CIVE 4033	GIS Applications for Water Resources	
CIVE 4050	Special Topics in Civil & Environmental Engineering	
CIVE 4123	The Legal & Regulatory Environment of Civil Engineering	
CIVE 4243	Use and Design of Geosynthetics	

CIVE 4863	Advanced Unit Operations in Environmental Engineering
CIVE 4873	Air Pollution Control Engineering
CIVE 4883	Introduction to Environmental Modeling
CIVE 4913	Groundwater Hydrology
CIVE 4923	Environ Risk Assessment
CIVE 4933	Water Treatment
CIVE 4943	Risk and Failure Analysis of Dams
CIVE 4963	Open Channel Flow
CIVE 4983	Residuals & Solid Waste Management
ENGR 4043 or ENGR 4060 may be used for one CIVE elective.	
Hours Subtotal	**9**
Total Hours	128

[1] CHEM 1515 fulfills the requirements for both CHEM 1414 and CIVE 2081.

Graduation Requirements

1. A minimum 2.00 Technical GPA. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A 'C' or better is required in all CIVE, ENSC, and Math prefixed courses required in the degree.
3. If "B" or higher is not earned in ENGL 1113 Composition I, then ENGL 1213 Composition II must be completed.
4. The major engineering design experience, capstone course, is satisfied by CIVE 4143 Environmental Engineering Design.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Construction Engineering Technology

The construction industry is the largest industry in the world. Leadership in this field requires a broad knowledge of labor, materials and equipment, capital and construction procedures. The interdisciplinary approach of the construction engineering technology program offers the student specialized coursework in all phases of construction, designed to prepare him or her for responsible positions in industry.

The primary goal of the Construction Engineering Technology (CET) program is to enhance the quality of the instructional program through effective management of the curriculum, teaching assignments and fiscal and physical resources. This goal includes providing instructional facilities, equipment and support services for faculty and students which maintain an excellent learning environment.

Program Educational Objectives

OSU Construction Engineering Technology graduates a few years after graduation will:

1. Solve problems typically found in the construction industry in construction engineering design, estimating, planning, scheduling and project management using mathematical, analytical and scientific skills of engineering technology.
2. Successfully work in teams and communicate effectively in written, oral and graphical forms.
3. Continue life-long career and professional growth by actively interacting with local industries and participating in appropriate professional societies.
4. Continue life-long personal growth in sensitivity to ethical responsibilities, global environments and associated social issues.

Construction Engineering Technology graduates can expect to obtain these student outcomes upon graduation:

(1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;

(2) an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

(3) an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

(4) an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

(5) an ability to function effectively as a member as well as a leader on technical teams.

Faculty with excellent credentials, including a balance of formal education, teaching ability and appropriate industry experience, are recruited nationwide and are provided opportunities for individual professional development and regular contact with the industry. Faculty members are encouraged to become involved in extension and research programs relating to the department's areas of strength or growth and to serve the needs for continuing education within the industry, particularly in the regional construction community.

These needs and opportunities for service are assessed regularly through close cooperation with local and regional construction professionals and industry associations. An active Advisory Board, representing a broad cross-section of the industry, meets regularly to offer support and guidance necessary to preserve uncompromising excellence.

The Construction Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/). The educational objectives of the Construction Engineering Technology program are consistent with those required by ETAC of ABET and are listed under "Division of Engineering Technology" in the Catalog.

The modern constructor must have a great deal of technical knowledge to keep abreast of rapidly changing equipment, materials and methods of construction. Specialized courses in estimating, surveying, structures, construction planning and scheduling, construction law and insurance, field and office management and construction procedures provide students with the background necessary for today's construction industry. These specialized courses, in addition to a blend of the basic sciences, business and general studies, produce a well-balanced curriculum for students in construction engineering technology. Special attention is given to computer applications in construction estimating, and the development of graphic, written and oral communication skills is emphasized throughout the curriculum.

Students with an interest in building structures may select courses in the "building" option of the construction engineering technology curriculum, which provides them with knowledge of working drawings, mechanical and electrical equipment of buildings, and other coursework for a career in building construction.

Students with an interest in civil engineering structures may select courses in the "heavy" option of the construction engineering technology curriculum, which provides them with knowledge of highways, soils, foundations and other coursework for a career in the heavy and industrial construction industry.

The program attempts to identify and recruit highly qualified students who will benefit from the instructional platform, and faculty members promote retention and ultimate graduation of construction engineering technology students through effective instruction and advisement. A schedule of outcome assessment among graduates and their employers assures that the program continues to provide the academic training required for success.

Graduates of construction engineering technology have shown the curriculum to be successful in their development as productive members of the construction industry, holding responsible positions as company executives, project managers, estimators, material and equipment salespersons, and construction managers at all levels.

Undergraduate Programs

- Construction Engineering Technology: Building, BSET (p. 1556)
- Construction Engineering Technology: Heavy, BSET (p. 1558)

Faculty

Heather Yates, EdD, CPC—Professor and Program Coordinator
Professor: Rachel Mosier, PhD, PE
Assistant Professors: Jonghoon Kim, PhD; Soojin Yoon, PhD

Construction Engineering Technology: Building, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 1213	Composition II	3
or ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A) (With a grade of "C" or better in MATH 2123 or MATH 2144) [1]	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A) (With a grade of "C" or better in MATH 2133 or 2153) [1]	3
or MATH 2153	Calculus II (A)	
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course.		
PHYS 1114	College Physics I (LN) (With a grade of "C" or better in PHYS 1114 or PHYS 2014) [1]	4
or PHYS 2014	University Physics I (LN)	
PHYS 1214	College Physics II (LN) (With a grade of "C" or better in PHYS 1214 or PHYS 2114) [1]	4
or PHYS 2114	University Physics II (LN)	
Select an additional 4 hours of Natural Science with N and L designations		4
Social & Behavioral Sciences (S)		
Courses designated (S)		6
Hours Subtotal		**45**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan.		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Specialty		
CET 1213	Introduction to Construction (With a grade of "C" or better) [1]	3
CET 2253	Printreading & BIM (With a grade of "C" or better) [1]	3
CET 2263	Estimating I (With a grade of "C" or better) [1]	3
CET 2343	Concrete Technology (With a grade of "C" or better) [1]	3
Related Specialty		
ACCT 2103	Financial Accounting (With a grade of "C" or better in ACCT 2103 or ACCT 2003) [1]	3
or ACCT 2003	Survey of Accounting	
EET 1003	Introduction to Microcomputer Programming (With a grade of "C" or better) [1]	3
ENSC 2113	Statics (With a grade of "C" or better) [1]	3
Hours Subtotal		**21**
Major Requirements		
Communications		
SPCH 2713	Introduction to Speech Communication (S) (With a grade of "C" or better) [1]	3
Specialty		
CET 3273	Scheduling Construction Projects (With a grade of "C" or better)	3
CET 3322	Construction Practicum I (With a grade of "C" or better)	2
CET 3332	Construction Practicum II (With a grade of "C" or better)	2
CET 3364	Structures I (With a grade of "C" or better)	4
CET 3433	Principles of Site Development (With a grade of "C" or better)	3
CET 3463	Environmental Building Systems (With a grade of "C" or better)	3
CET 3554	Structures II	4
CET 4263	Estimating II (With a grade of "C" or better)	3
CET 4273	Technology in Construction (With a grade of "C" or better)	3
CET 4283	Business Practices for Construction (With a grade of "C" or better)	3
CET 4293	Construction Manager Concepts (With a grade of "C" or better)	3
CET 4443	Construction Safety and Loss Control	3
CET 4563	Construction Law and Insurance (With a grade of "C" or better)	3
Related Specialty		
CIVE 3614	Engineering Surveying (With a grade of "C" or better)	4
ENSC 2143	Strength of Materials (With a grade of "C" or better in ENSC 2143, CET 3323, or GENT 3323)	3
or CET 3323	Theory of Built Structures	
or GENT 3323	Strength of Materials	
IEM 3513	Economic Decision Analysis	3

Hours Subtotal		**52**
Electives		
Select 6 hours of the following:		6
CET 3213	Soft Skills for Effective Interpersonal Communication (S) (With a grade of "C" or better)	
CET 3633	CAD and BIM for Construction Managers	
CET 4333	Equipment Management for Constructors (With a grade of "C" or better)	
CET 4533	Heavy Civil Construction and Estimating (With a grade of "C" or better)	
CET 4050	Advanced Construction Management Problems	
EEE 3023	Introduction to Entrepreneurial Thinking and Behavior	
EEE 4223	Entrepreneurial Marketing	
EEE 4533	Growing Small and Family Ventures	
FEMP 3103	Introduction to Emergency Management (S)	
FEMP 3733	Emergency Management: Preparedness and Response	
FEMP 3763	Emergency Management: Recovery and Mitigation	
FPST 3013	Safety Management (S)	
MGMT 3013	Fundamentals of Management (S)	
MKTG 3213	Marketing (S)	
Hours Subtotal		**6**
Total Hours		124

[1] Complete all required courses prior to admission to Upper Division. (These courses are also listed on the *Calculation Work Sheet of the CET Application to Upper Division form.*)

Other Requirements

Admission to Upper Division (required)

1. Refer to the OSU Catalog corresponding to your matriculation date and the *Policy for Admission to the Upper Division of the Curriculum for CET* for detailed admissions requirements.
2. Complete a minimum of 60 credit hours (from the degree plan) prior to admission to Upper Division.
3. Achieve a minimum Selection GPA (SGPA) of 3.05 (from the *Calculation Work Sheet of the CET Application to Upper Division form*).

Graduation Requirements

1. A minimum technical GPA of 2.00 is required. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A grade of 'C' or better is required in each course that is a prerequisite to a required course that has an engineering or engineering technology prefix. A grade of 'C' or better is also required in CET 3213, CET 3463, CET 3433, CET 4273, CET 4293, CET 4333 and CET 4533.
3. Each student is required to sit for the American Institute of Constructors Level 1 – Associate Constructors Certification Exam or the Fundamentals of Engineering Exam.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Construction Engineering Technology: Heavy, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 1213	Composition II	3
or ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A) (With a grade of "C" or better in MATH 2123 or 2144) [1]	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A) (With a grade of "C" or better in MATH 2133 or MATH 2153) [1]	3
or MATH 2153	Calculus II (A)	
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course.		
PHYS 1114	College Physics I (LN) (With a grade of "C" or better in PHYS 1114 or PHYS 2014) [1]	4
or PHYS 2014	University Physics I (LN)	
PHYS 1214	College Physics II (LN) (With a grade of "C" or better in PHYS 1214 or PHYS 2114) [1]	4
or PHYS 2114	University Physics II (LN)	
Select an additional 4 hours of Natural Science with N and L designations		4
Social & Behavioral Sciences (S)		
Courses designated (S)		6
Hours Subtotal		**45**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan.		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Specialty		
CET 1213	Introduction to Construction (With a grade of "C" or better) [1]	3
CET 2253	Printreading & BIM (With a grade of "C" or better) [1]	3
CET 2263	Estimating I (With a grade of "C" or better) [1]	3
CET 2343	Concrete Technology (With a grade of "C" or better) [1]	3
Related Specialty		
ACCT 2103	Financial Accounting (With a grade of "C" or better in ACCT 2103 or ACCT 2003) [1]	3
or ACCT 2003	Survey of Accounting	
EET 1003	Introduction to Microcomputer Programming (With a grade of "C" or better) [1]	3
ENSC 2113	Statics (With a grade of "C" or better) [1]	3
Hours Subtotal		**21**
Major Requirements		
Communications		
SPCH 2713	Introduction to Speech Communication (S) (With a Grade of "C" or Better) [1]	3
Specialty		
CET 3273	Scheduling Construction Projects (With a grade of "C" or better)	3
CET 3322	Construction Practicum I (With a grade of "C" or better)	2
CET 3332	Construction Practicum II (With a grade of "C" or better)	2
CET 3364	Structures I (With a grade of "C" or better)	4
CET 3433	Principles of Site Development (With a grade of "C" or better)	3
CET 3554	Structures II	4
CET 4263	Estimating II (With a grade of "C" or better)	3
CET 4283	Business Practices for Construction (With a grade of "C" or better)	3
CET 4293	Construction Manager Concepts (With a grade of "C" or better)	3
CET 4333	Equipment Management for Constructors (With a grade of "C" or better)	3
CET 4443	Construction Safety and Loss Control	3
CET 4533	Heavy Civil Construction and Estimating (With a grade of "C" or better)	3
CET 4563	Construction Law and Insurance (With a grade of "C" or better)	3
Related Specialty		
CIVE 3614	Engineering Surveying (With a grade of "C" or better)	4
ENSC 2143	Strength of Materials (With a grade of "C" or better in ENSC 2143, CET 3323, or GENT 3323)	3
or CET 3323	Theory of Built Structures	
or GENT 3323	Strength of Materials	
IEM 3513	Economic Decision Analysis	3

Hours Subtotal		**52**
Electives		
Select 6 hours of the following:		6
CET 3463	Environmental Building Systems (With a grade of "C" or better)	
CET 3213	Soft Skills for Effective Interpersonal Communication (S)	
CET 3633	CAD and BIM for Construction Managers	
CET 4050	Advanced Construction Management Problems	
CET 4273	Technology in Construction (With a grade of "C" or better)	
EEE 3023	Introduction to Entrepreneurial Thinking and Behavior	
EEE 4223	Entrepreneurial Marketing	
EEE 4533	Growing Small and Family Ventures	
FEMP 3103	Introduction to Emergency Management (S)	
FEMP 3733	Emergency Management: Preparedness and Response	
FEMP 3763	Emergency Management: Recovery and Mitigation	
FPST 3013	Safety Management (S)	
MGMT 3013	Fundamentals of Management (S)	
MKTG 3213	Marketing (S)	
Hours Subtotal		**6**
Total Hours		124

[1] Complete all courses prior to admission to Upper Division (these courses are also listed on the *Calculation Work Sheet of the CET Application to Upper Division* form.

Other Requirements

Admission to Upper Division (required)

1. Refer to the OSU Catalog corresponding to your matriculation date and the *Policy for Admission to the Upper Division of the Curriculum for CET* for detailed admissions requirements.
2. Complete a minimum of 60 credit hours (from the degree plan) prior to admission to Upper Division.
3. Achieve a minimum Selection GPA (SGPA) of 3.05 (from the *Calculation Work Sheet of the CET Application to Upper Division form*).

Graduation Requirements

1. A minimum technical GPA of 2.0 is required. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A grade of 'C' or better is required in each course that is a prerequisite to a required course that has an engineering or engineering technology prefix. A grade of 'C' or better is also required in CET 3213, CET 3463, CET 3433, CET 4273, CET 4293, CET 4333 and CET 4533.
3. Each student is required to sit for the American Institute of Constructors Level 1 – Associate Constructors Certification Exam or Fundamentals of Engineering Exam.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Division of Engineering Technology

Engineering technology education is concerned with the real-world application of engineering achievement. Almost all faculty members have extensive industrial experience, and students are educated and trained in such a way that they will be ready to work with little or no additional training after graduation.

Curricula

Engineering technology curricula at OSU are four-year programs which lead to the Bachelor of Science in Engineering Technology. Graduates of the program are known as "technologists and/or applied engineers." The student receives an intensive education in his or her technical specialty and great depth in mathematics and technical sciences. The program provides breadth in related technical, communication and socio-humanistic studies. The graduate is to be capable of independent action in performance of technical activities and is frequently involved as a coordinator, expediter or supervisor of other technical personnel. His or her capability in technical sales and other public-contact positions is enhanced by his or her background in selected liberal studies.

The engineering technology graduate is qualified to select from a broad array of engineering-related positions. Job titles of engineering technology graduates include field engineer, test engineer, associate engineer, product engineer, sales engineer, tool designer, production engineer, engineering technologist, estimator, scheduler and project engineer.

Those who have the interest and aptitude toward applications are likely engineering technology majors. These students particularly appreciate the engagement of technical specialty courses beginning with the first semester and continuing throughout the course of study. The relevance of the technical science and related technical courses adds further satisfaction.

The Division of Engineering Technology is offering opportunities for its students to minor in entrepreneurship. Usually, students will take two or three additional classes to get a minor in addition to his/her degree.

The Bachelor of Science in Engineering Technology program is composed of the following curricular subdivisions:

Mathematics and science—trigonometry, applied calculus, general physics, and chemistry or other science.
Technical specialty—technical science and related technical courses.
Communication—English composition, and written and oral technical communication.
Social sciences and humanities—history, government, religion, literature, art, music.
Electives—controlled and general.

Bachelor of Science in Engineering Technology Degree Programs

Construction Engineering Technology, 124 hours
Electrical Engineering Technology, 130 hours
Fire Protection and Safety Engineering Technology, 125 hours
Mechanical Engineering Technology, 122 hours

Master of Science in Engineering Technology Degree Programs

Fire Safety and Explosion Protection, 30 or 32 hours

Master of Science Degree Programs

Fire and Emergency Management Administration, 33 hours

Doctorate of Philosophy Degree Programs

Fire and Emergency Management Administration, 60 hours beyond the master's degree.

Accreditation

Each Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

CO-OP Program

The College of Engineering, Architecture and Technology offers an experience-based program, Cooperative Education (Co-op). Co-op allows engineering technology students to achieve a balanced education through the combination of theoretical and practical knowledge during their early years of professional development. The student's education is a cooperative effort between the University and industry. Students alternate semesters on campus with work semesters in industry during their junior and senior years. The periods of employment constitute an essential element in the educational process. Students gain practical knowledge which is carried back to the classroom, giving academic programs a sense of reality. By the time they receive their degrees, students have accumulated the equivalent of a year-and-a-half of progressively challenging work experience.

Participation in Co-op is voluntary; transfer students must successfully complete at least one semester at OSU prior to their first placement. Students may obtain further information about the program from the coordinator, 101A Engineering North.

Transfer Students

An important, contemporary educational development is the "two-plus-two" bachelor's program. Those completing an associate degree in technology-oriented curricula at other institutions are generally admissible to the junior year with a minimum loss of academic time. The "two-plus-two" concept provides the attractive feature for students to obtain a four-year undergraduate degree in engineering technology.

Required coursework in mathematics and basic science is utilized to meet up to 18 semester hours of General Education requirements also. The Scientific Investigation requirement is met as a part of the coursework meeting professional requirements for basic science.

Academic Areas

- Construction Engineering Technology (p. 1555)
- Electrical Engineering Technology (p. 1573)
- Fire Emergency Management Program (p. 1579)
- Fire Protection and Safety Engineering Technology (p. 1582)
- Mechanical Engineering Technology (p. 1606)

Minors

- Construction (CNST), Minor (p. 1562)
- Mechatronic Engineering Technology for EET Students (EETM), Minor (p. 1563)
- Mechatronic Engineering Technology for MET Students (METM), Minor (p. 1564)

Faculty

Young Chang, PhD, PE, CFPS—Professor and Head
Associate Professor and FPSET Program Coordinator: Virginia Charter, PhD, PE
Associate Professor and FEMP Program Coordinator: Haley Murphy, PhD
Assistant Professor and EET Program Coordinator: Avimanyu Sahoo, PhD
Professor and MET Program Coordinator: Chulho Yang, PhD, PE
Professor and CET Program Coordinator: Heather Yates, EdD, CPC
Associate Professor and FSEP Graduate Advisor: Bryan Hoskins, PhD, PE
Associate Professors: Imad Abouzahr, PhD, PE; Robert Agnew, PhD, CSP, CIH; Aaron Alexander, PhD; Warren L. Lewis, MS; Rachel Mosier, PhD, PE; Brian Norton, MS, PE
Assistant Professors: Xiangyu (Dale) Li, PhD; Yuan Lin, PhD; Tony McAleavy, PhD; Ellis Nuckolls, MS, PE; Haejun Park, PhD; Ilchung Park, PhD; Diana Rodriguez Coca, PhD; Hitesh Vora, PhD; Huaxia Wang, PhD; Soojin Yoon, PhD
Associate Professor of Professional Practice: Michael McCombs, PhD
Assistant Professor of Professional Practice: Leslie Stockel, MS, CSP
Assistant Dean of Engineering Extension and Adjunct Assistant Professor: Ed Kirtley, MS
Teaching Assistant Professor: Timothy Wilson, MS, CSP
Adjunct Assistant Professor: Jeeyeon Hahn, PhD; Carlos Montes, PhD
Teaching Associate: Laura Emerson, MS

Construction (CNST), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Total Hours: 17 Hours

Code	Title	Hours
Required Courses		
CET 1213	Introduction to Construction	3
CET 2253	Printreading & BIM	3
CET 2263	Estimating I	3
CET 3273	Scheduling Construction Projects	3
Choose 2 of the following: [1]		5
CET 3322	Construction Practicum I [1]	
CET 3213	Soft Skills for Effective Interpersonal Communication (S)	
CET 3443	Environmental Building Systems (Non-Majors)	
CET 3633	CAD and BIM for Construction Managers	
CET 4263	Estimating II	
CET 4443	Construction Safety and Loss Control	
CET 4563	Construction Law and Insurance	
Total Hours		17

[1] If CET 3322 is not selected, the total hours required for the minor will be increased by one.

Minimum Grade Requirements

- 2.0 minimum grade requirement for minors to be awarded.
- "C" or better in CET 1213, CET 2253, CET 2263, and CET 3272.

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Mechatronic Engineering Technology for EET Students (EETM), Minor

Total Hours: 18 Hours.

Code	Title	Hours
MET 1123	Technical Drawing and Basic CAD	3
ENSC 2113	Statics	3
or GENT 2323	Statics	
ENSC 2143	Strength of Materials	3
or GENT 3323	Strength of Materials	
MET 3003	Dynamics	3
or ENSC 2123	Elementary Dynamics	
EET 3803	Fundamentals of Mechatronics [1]	3
EET 4803	Mechatronics System Design [1]	3
Total Hours		18

[1] These courses are the same as MET 3803 and MET 4803, respectively.

Additional Requirements

- 2.2 overall GPA in courses submitted for the minor
- Grade of C or better in each course submitted for the minor

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Mechatronic Engineering Technology for MET Students (METM), Minor

Total Hours: 21 Hours.

Code	Title	Hours
EET 2303	Technical Programming	3
EET 2544	Pulse and Digital Techniques	4
EET 2635	Solid State Devices and Circuits	5
EET 3423	Applied Analysis for Technology	3
MET 3803	Fundamentals of Mechatronics [1]	3
MET 4803	Mechatronics System Design [1]	3
Total Hours		21

[1] These courses are the same as EET 3803 and EET 4803, respectively.

Additional Requirements

- 2.2 overall GPA in courses submitted for the minor
- Grade of C or better in each course submitted for the minor

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Electrical and Computer Engineering

The School of Electrical and Computer Engineering is highly recognized throughout the nation for its student-centered, laboratory intensive curriculum. It is a partner of choice for employers seeking well-educated, highly-motivated and uniquely creative college graduates dedicated to life-long learning. The School has devoted professors from prestigious universities who serve, instruct and mentor undergraduate and graduate students pursuing Bachelor of Science (BS), Master of Engineering (MEng), Master of Science (MS), or Doctorate (PhD) degrees in electrical engineering or a BS degree in computer engineering. Both the undergraduate Electrical Engineering and Computer Engineering programs are accredited by ABET—the leading accreditor of engineering programs—to assure students, parents, industry partners and other stakeholders that our programs are of the highest quality.

Electrical engineers and computer engineers have been at the center of the technological revolution that has occurred over the past 100 years. Marvels such as the transistor, radio, telephone, television, internet, microprocessor, computer, tablet, radar system, motor, wind generator, GPS, smart phone, laser, microwave oven, electric car, pacemaker, antenna, and the flat panel display, to name only a handful, have resulted from the hard work and creative talents of electrical engineers and computer engineers. And since electricity and computers are essential in a modern society, the electrical engineer and the computer engineer will always be in high demand.

Electrical engineering encompasses many exciting subdisciplines including energy systems, machines, power electronics, analog electronics, digital electronics, mixed-signal electronics, VLSI chips, instrumentation, sensors, signal processing, machine vision, artificial intelligence, communications, control systems, robotics, wireless devices, electromagnetic fields, photonics, embedded controllers, networking, software development, biomedical devices and computer architecture. The School encompasses all of these subdisciplines in its curriculum or research activities.

Computer Engineering is a relatively young engineering discipline that combines a strong foundation in electrical engineering with elements of computer science, including hardware and software integration, and design. Computer engineering includes digital logic design, computer architecture, digital data communications, computer and sensor interfacing, microprocessors, digital control, VLSI circuits and systems, operating and software systems, and computer arithmetic.

Beyond creating technology, electrical engineers and computer engineers of tomorrow must be aware of the social, economic, ethical and environmental impact of their respective technologies. They must also communicate effectively, possess excellent teamwork skills, and understand, perform and complete the process of engineering design. The undergraduate programs in electrical engineering and computer engineering at Oklahoma State University equip graduates with these critical skills.

Undergraduate Program Educational Objectives

The Undergraduate Program Educational Objectives reflect the aspirational expectations for our electrical engineering and computer engineering graduates after they enter their professional careers. Specifically:

- Our Graduates will be widely employed across the range of subdisciplines within electrical engineering and computer engineering, and will be highly sought after by industrial, academic, non-profit and governmental organizations.
- Our Graduates will compete in a technologically changing world, collaborate in a diverse workforce, and communicate effectively their knowledge and ideas to colleagues, employers, customers and stakeholders.
- Our Graduates will be recognized leaders, team players, problem solvers, innovators and entrepreneurs in their profession.
- Our Graduates will identify and contribute to solving grand-challenge problems that improve the lives of people in Oklahoma, the United States, and around the world, serving their communities and their profession to produce a lasting, significant and positive impact.
- Our Graduates will abide by the highest ethical standards of professional practice in a technologically changing, professional environment.
- Our Graduates will continue to develop professionally throughout their lives by being adaptive learners with a never ending desire to assimilate new knowledge and embrace new technologies.
- Our Graduates will have the knowledge to earn professional registration or certification in their field or earn an advanced post-graduate or professional degree should they choose.
- Our Graduates will make a positive difference in the world.

Undergraduate Program and Student Learning Outcomes

To support the aforementioned Program Educational Objectives, the School has established Student Learning Outcomes that are regularly assessed and expected of all students upon completion of their chosen program in Electrical Engineering or Computer Engineering. Attainment of the following outcomes prepares graduates to enter the professional practice of engineering:

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.

The undergraduate electrical engineering and computer engineering programs at Oklahoma State University prepare each graduate for a life-long professional career. During the first two years of study, students

complete a carefully designed set of lower-division courses in the areas of electrical engineering, computer engineering, computer science, mathematics, physics, chemistry, humanities, and social sciences. After successfully completing these courses, students enroll in both required and elective upper-division courses in electrical engineering and computer engineering.

Electrical engineering and computer engineering students obtain fundamental knowledge and technical skills needed by tomorrow's professionals. Students pursuing a degree in Electrical Engineering are required prior to graduation to have taken a set of area courses in a single sub-discipline in ECE. These areas include a) control systems, digital signal processing, and communication systems, b) energy and power, c) computer systems and digital electronics, d) analog electronics, and e) microwaves and photonics. Students pursuing a degree in Computer Engineering are required to take specialized computer engineering courses dealing with microcontrollers, embedded controllers, robotics, computer architecture, discrete mathematics, digital logic design, networking, cybersecurity, programming, coding, mobile computing and digital electronics.

Instructional laboratories are a central part of the undergraduate curriculum to grant opportunities for hands-on experience in areas such as microcomputers, digital logic design, electronics, networks, instrumentation, optics, real-time digital signal processing, communications and electromagnetics. These laboratories are located in the College of Engineering, Architecture and Technology's new 70,000 ft^2 teaching facility, Endeavor, and are equipped with state-of-the-art, industrial-grade equipment.

Engineering design laboratories require students to solve open-ended, practical problems in a manner that demonstrate the students' ability to apply fundamental concepts, creativity and imagination. These problems have several possible outcomes; students must choose an acceptable approach and demonstrate that the optimal outcome has been met.

All electrical engineering and computer engineering students receive multiple engineering design experiences. The capstone design experience is a two-course sequence typically taken during the students' last two semesters of the program. The capstone experience gives students an opportunity to apply and demonstrate the skills that they have developed throughout the program. These design courses integrate theory, analysis, simulation, design and experimental skills to achieve a specific design outcome. Teamwork, communication skills, and the complete engineering design process—from problem definition to prototype that includes both presentation and documentation—are emphasized.

Student design teams receive individual project mentoring from an appropriate faculty member who provides project management advice and supervision. The capstone experience concludes with a formal public design demonstration, oral presentation and written report.

Degree Programs and Options

The School of Electrical and Computer Engineering (ECE) offers a full range of undergraduate and graduate program choices that allow students to excel in their careers. Specifically, the School of Electrical and Computer Engineering offers five degrees:

- Bachelor of Science in Electrical Engineering (BSEE)
- Bachelor of Science in Computer Engineering (BSCpE)
- Master of Engineering in Electrical Engineering (MEngEE, non-thesis)
- Master of Science in Electrical Engineering (MSEE, thesis)
- Doctor of Philosophy in Electrical Engineering (PhDEE)

Bachelor of Science:

- This degree program is designed to provide fundamental scientific and mathematical knowledge needed for an engineering education and an entry-level engineering career.
- Broad-based and in-depth technical courses are provided to teach the fundamentals of the electrical engineering and computer engineering professions.
- The degree focuses on analysis and design methods, laboratory and simulation experiences, and theoretical and practical problems.
- Requirements: 124 credits hours (BSEE) and 125 credit hours (BSCpE).

Master of Engineering:

- This degree program is tailored to students who wish to gain advanced knowledge and expertise in subject areas associated with their professional pursuits.
- This non-research, non-thesis instructional program is ideal for Distance Education students or for baccalaureate graduates interested in professional development.
- This program is available online.
- Requirements: 33 credit hours of coursework. Specific requirements for the MEngEE program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

Master of Science:

- This degree program is tailored to students who wish to gain advanced knowledge in subject areas associated with their professional pursuits.
- The program emphasizes research as part of the learning experience and culminates with the defense of a thesis.
- This program is ideal for students who wish to pursue a PhD.
- This program is available online.
- Requirements: 24 credit hours of coursework and 6 credit hours of thesis research. Specific requirements for the MSEE program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

Doctor of Philosophy:

- This degree program is tailored to students who desire to have a teaching and research career in academia or a research career in industry or government laboratories.
- This program is ideal for those students who have a passion to acquire in-depth knowledge.
- The program emphasizes the creation of new knowledge during the research process, the publication of that knowledge, and the defense of a dissertation.
- Requirements: 73 total credit hours beyond the BSEE/BSCpE degree. Specific requirements for the PhD program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

Options: Students are also given the option to combine degrees to take advantage of common courses between various degrees, thereby reducing the total number of credit hours relative to non-combining

options. These combining options are highly attractive from a financial and career point of view. That is, these options are less expensive and take less time. Knowledge gained in these degree programs adds value to what the student can do once or while employed. The current combining options are:

- Dual BSEE and BSCpE degrees (137 credit hours)
- Joint "4+1" BSEE/BSCpE plus MEngEE degrees (148/149 credit hours)

With effective planning, the dual BSEE and BSCpE program can be completed in four years by taking approximately 17 credit hours of courses each semester. It may take less time if students have Advanced Placement credit hours. This dual degree program allows a student to have a true comprehensive education across the electrical and computer engineering spectrum, thus preparing the student for just about any entry-level career in electrical engineering or computer engineering. The program effectively requires the completion of the BSCpE degree plus 12 additional credit hours in non-computer, electrical engineering courses. A degree advising sheet for the dual program is posted on the School's web page; https://ece.okstate.edu/. This sheet has been devised to assure that the degree requirements for both the BSCpE and BSEE degrees are satisfied in the most expeditious manner.

The "4+1" program—available only to OSU baccalaureate students—is a five-year accelerated program that combines the BSEE or BSCpE degree with the M.Eng.EE degree. It is designed to give students a broad-based education in electrical engineering or computer engineering along with a highly in-depth education in a few key areas. This program is ideal for those students who want advanced knowledge to enhance their competitiveness in the work force and to satisfy their longing for in-depth knowledge that cannot be obtained in the baccalaureate degrees. Specific requirements for the "4+1" program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

A degree in electrical engineering or computer engineering is an excellent foundation for other professional fields such as medicine and law. Many graduates also pursue advanced programs in business and management after earning a degree in engineering.

Undergraduate Programs

- Computer Engineering, BSCP (p. 1569)
- Electrical Engineering, BSEE (p. 1571)

Graduate Programs

The School of Electrical and Computer Engineering offers three graduate degrees, all in electrical engineering: Master of Engineering (MENGEE), Master of Science (MSEE) and Doctor of Philosophy (PhDEE).

These graduate degree programs are flexible in course selection and emphasis. Both the Mater of Engineering and the Master of Science programs are available online.

The Master of Engineering degree program is tailored to students who wish to gain advanced knowledge and expertise in subject areas associated with their professional pursuits. This non-research, non-thesis, instructional program is ideal for Distance Education students or for baccalaureate graduates interested in professional development to enhance their competitiveness in the workplace. It is well-suited for students who have little interest in a research-centric education.

The Master of Science degree emphasizes advanced mathematics, theory, design and research. It is intended for students interested in cutting-edge careers or who want to prepare for advanced research associated with the PhD program. This degree combines coursework with research that allows students to expand their knowledge in an in-depth area of electrical engineering or computer engineering. The MSEE program culminates with the defense of a thesis.

The Doctor of Philosophy degree is designed to prepare students for positions in academia, industry and government. This degree emphasizes the creation of new knowledge through the in-depth research process, as documented in the doctoral dissertation.

The School of Electrical and Computer Engineering also offers a "4+1" degree program that combines the BSEE/BSCpE degree programs with the MEngEE degree program. The "4+1" program is only available to OSU baccalaureate students. It is designed to be completed in five years and to give students a broad-based education in electrical engineering or computer engineering along with a highly in-depth education in a few key areas. This program is ideal for those students who want advanced knowledge to enhance their competitiveness in the workforce and to satisfy their longing for in-depth knowledge that cannot be obtained in the baccalaureate degrees. Specific requirements for the "4+1" program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

Students typically select coursework and participate in research and design projects in the following areas:

- Communication systems, cybersecurity and networks
- Control systems, robotics and mechatronics
- Analog, mixed-signal and RF electronics
- Computer architecture, VLSI digital circuits and arithmetic
- Electromagnetics and THz sciences
- Microcontrollers and embedded control
- Photonics and electro-optics
- Digital signal, image and video processing
- Energy and power
- Bioengineering

Admission Requirements

Admission to the Graduate College, as described under "General Regulations" in the "Graduate College" section of the University Catalog is required. Graduation from an electrical engineering or computer engineering program accredited by the ABET and sufficient GRE scores are required for admission to the School of Electrical and Computer Engineering.

Graduates from non-engineering fields such as mathematics, physics and computer science are also admitted to the School of Electrical and Computer Engineering graduate programs if an evaluation of the applicant's official transcript indicates that the applicant is prepared to succeed in graduate-level course work in electrical and computer engineering, or can be expected to do so after a reasonable amount of remedial coursework has been completed. This condition also applies to graduates of unaccredited engineering programs and engineering technology programs.

Degree Requirements

The Master of Engineering degree in Electrical Engineering (MEngEE) is awarded to those students who successfully complete an approved plan of study. The degree requires 33 credit hours of coursework; a thesis is not required. The plan of study requires, at a minimum, 18 hours of 5000-level courses in electrical and computer engineering. Most plans of study include additional 5000-level courses, depending upon the background and particular educational goals of the student. Additional remedial work in undergraduate electrical and computer engineering courses may be required for students who do not have a sufficient background in electrical engineering. Specific requirements for the MEngEE program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

The Master of Science degree in Electrical Engineering (MSEE) is awarded to those students who successfully complete an approved plan of study. The degree requires 24 credit hours of coursework plus 6 credit hours for the thesis. In addition to the thesis requirement, the plan of study requires, at a minimum, 18 hours of 5000-level courses in electrical and computer engineering. Most plans of study include additional 5000-level courses, depending upon the background and particular educational goals of the student. Each student is encouraged to include courses in supporting disciplines such as mathematics, physics, computer science or other engineering fields. Additional remedial work in undergraduate electrical and computer engineering courses may be required for students who do not have a sufficient background in electrical engineering. Specific requirements for the MSEE program are available on the web in the document entitled "Memorandum to Graduate Students"; see https://ece.okstate.edu/.

The Doctor of Philosophy (PhDEE) degree is granted to recognize high achievement in coursework selected from the broad field of electrical and computer engineering. The degree is conferred on those who demonstrate the ability to perform independent research in a chosen field of specialization that generates new knowledge, as presented in a dissertation. For this degree the Graduate College requires a minimum of 90 credit hours of acceptable academic work beyond the bachelor's degree, including credit for the dissertation. Specific requirements for the PhD program are available on the web in the document entitled "Memorandum to Graduate Students;" see https://ece.okstate.edu/.

The School of Electrical and Computer Engineering also participates in several interdisciplinary degree programs (See "Graduate Programs" under "Industrial Engineering and Management," and "Telecommunications Management" the "Graduate College" section of the Catalog.).

Faculty

Jeffrey L. Young, PhD, PE—Professor and Head
Professor and OSURF Endowed Chair: Jeffrey L. Young, PhD, PE
Regents Professor: Gary Yen, PhD
Associate Dean for CEAT Research, Professor and Henry Bellmon Chair: Charles F. Bunting, PhD
Cal and Marilyn Vogt Professor: Guoliang Fan, PhD
Earl and Carolyn Glimp Professor: James Stine, PhD
Professors: H. Jack Allison, PhD, PE (emeritus); Charles M. Bacon, PhD (emeritus); James E. Baker, PhD (emeritus); Richard L. Cummins, PhD (emeritus); Daniel R. Grischkowsky, PhD (emeritus); Martin T. Hagan, PhD, PE (emeritus); Louis Johnson, PhD (emeritus); Subhash Kak, PhD (emeritus); Jerzy S. Krasinski, PhD; Daqing Piao, PhD; Rama Ramakumar, PhD, PE (emeritus); Ronald P. Rhoten, PhD, PE (emeritus); Keith A. Teague, PhD, PE; James C. West, PhD; Rao Yarlagadda, PhD (emeritus); Weili Zhang, PhD
Professor of Practice: Michael Gard, PhD, PE
Associate Professors: Chriswell G. Hutchens, PhD, PE (emeritus); Carl D. Latino, PhD; George Scheets, PhD (emeritus); Weihua Sheng, PhD
Assistant Professors: Sabit Ekin, PhD; Nishantha Ekneligoda, PhD; John Hu, PhD; John O'Hara, PhD; Ickhyun Song, PhD

Computer Engineering, BSCP

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 125

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) (With a grade of "C" or better)	4
MATH 2153	Calculus II (A) (With a grade of "C" or better)	3
MATH 2163	Calculus III (With a grade of "C" or better)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN) (With a grade of "C" or better)	4
PHYS 2114	University Physics II (LN) (With a grade of "C" or better)	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Mathematics		
MATH 2233	Differential Equations (With a grade of "C" or better)	3
Engineering		
ENGR 1111	Introduction to Engineering	1
Engineering Science		
ECEN 3213	Computer Based Systems in Engineering (With a grade of "C" or better)	3
ENSC 2611	Electrical Fabrication Lab (With a grade of "C" or better)	1
Computer Science		
CS 1113	Computer Science I (A) (With a grade of "C" or better)	3
CS 2351	Unix Programming	1
CS 2433	C/C++ Programming (With a grade of "C" or better)	3
CS 3653	Discrete Mathematics for Computer Science (With a grade of "C" or better)	3
Electrical & Computer Engineering		
ECEN 2714	Fundamentals of Electric Circuits (With a grade of "C" or better)	4
ECEN 3233	Digital Logic Design (With a grade of "C" or better)	3
Hours Subtotal		**25**
Major Requirements		
Mathematics		
MATH 3013	Linear Algebra (A) (With a grade of "C" or better)	3
Electrical & Computer Engineering		
ECEN 3314	Electronic Devices and Applications	4
ECEN 3513	Signal Analysis	3
ECEN 3613	Applied Fields and Waves I	3
ECEN 3714	Network Analysis (With a grade of "C" or better)	4
ECEN 3903	Introduction to Semiconductor Devices (With a grade of "C" or better in ECEN 3903 or PHYS 3313)	3
or PHYS 3313	Introduction to Semiconductor Device Physics	
ECEN 4013	Design of Engineering Systems	3
ECEN 4024	Capstone Design	4
ECEN 4213	Embedded Computer Systems Design	3
ECEN 4243	Computer Architecture	3
ECEN 4303	Digital Integrated Circuit Design	3
ECEN 4503	Random Signals and Noise	3
Computer Science		
CS 4323	Design and Implementation of Operating Systems I	3
or ECEN 4283	Computer Networks	
CS 3353	Data Structures and Algorithm Analysis I (With a grade of "C" or better)	3
Industrial Engineering & Management		
IEM 3503	Engineering Economic Analysis	3
Electives		
Select six hours selected from combinations on the departmentally approved list and approved by advisor		6
Hours Subtotal		**54**
Controlled Electives		
Select 3 hours of the following controlled electives:		3
ENSC 2113	Statics	
ENSC 2123	Elementary Dynamics	
ENSC 2143	Strength of Materials	
ENSC 2213	Thermodynamics	

Engineering courses 3000 level and above	
Other courses such as MATH, CS, STAT, etc., may be approved by advisor	
Hours Subtotal	**3**
Total Hours	125

[1] If a “B” or higher is not earned in ENGL 1113 Composition I or ENGL 1313 Critical Analysis and Writing I, then ENGL 1213 Composition II or ENGL 1413 Critical Analysis and Writing II is also required (per Academic Regulation 3.5 (p. 882)).

Graduation Requirements

1. A minimum GPA of 2.00 Technical GPA. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better in courses listed above as requiring a "C" or better.
3. The major engineering design experience, capstone course, is satisfied by ECEN 4013 Design of Engineering Systems and ECEN 4024 Capstone Design.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Electrical Engineering, BSEE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) (With a grade of "C" or better)	4
MATH 2153	Calculus II (A) (With a grade of "C" or better)	3
MATH 2163	Calculus III (With a grade of "C" or better)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN) (With a grade of "C" or better)	4
PHYS 2114	University Physics II (LN) (With a grade of "C" or better)	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
Mathematics		
MATH 2233	Differential Equations (With a grade of "C" or better)	3
Engineering		
ENGR 1111	Introduction to Engineering	1
Engineering Science		
ENSC 2113	Statics (With a grade of "C" or better)	3
ENSC 2611	Electrical Fabrication Lab (With a grade of "C" or better)	1
ECEN 3213	Computer Based Systems in Engineering (With a grade of "C" or better)	3
Computer Science		
CS 1113	Computer Science I (A) (With a grade of "C" or better)	3
CS 2433	C/C++ Programming (With a grade of "C" or better)	3
Electrical & Computer Engineering		
ECEN 2714	Fundamentals of Electric Circuits (With a grade of "C" or better)	4
ECEN 3233	Digital Logic Design (With a grade of "C" or better)	3
Hours Subtotal		**24**
Major Requirements		
Mathematics		
MATH 3013	Linear Algebra (A) (With a grade of "C" or better)	3
Electrical & Computer Engineering [3]		
ECEN 3314	Electronic Devices and Applications	4
ECEN 3513	Signal Analysis	3
ECEN 3613	Applied Fields and Waves I	3
ECEN 3714	Network Analysis (With a grade of "C" or better)	4
ECEN 3903	Introduction to Semiconductor Devices (With a grade of "C" or better in ECEN 3903 or PHYS 3313)	3
or PHYS 3313	Introduction to Semiconductor Device Physics	
ECEN 4013	Design of Engineering Systems	3
ECEN 4024	Capstone Design	4
ECEN 4503	Random Signals and Noise	3
Industrial Engineering & Management [3]		
IEM 3503	Engineering Economic Analysis	3
ECEN Junior Electives [3]		
Select one of the following with advisor approval:		3
ECEN 3723	Systems I	
ECEN 3913	Solid State Electronic Devices	
ECEN Electives		
Select Six ECEN or other courses selected from combinations on the departmentally approved list, including optionally one or more courses listed, but not taken, from the ECEN Junior Elective list above, and with advisor approval		18
Hours Subtotal		**54**
Controlled Electives		
Select 3 hours of the following controlled electives:		3
ENSC 2123	Elementary Dynamics	
ENSC 2143	Strength of Materials	
ENSC 2213	Thermodynamics	
Engineering courses 3000 level and above		
Other courses such as MATH, CS, STAT, etc., may be approved by advisor		

Hours Subtotal	**3**
Total Hours	124

[1] If a “B” or higher is not earned in ENGL 1113 Composition I or ENGL 1313 Critical Analysis and Writing I, then ENGL 1213 Composition II or ENGL 1413 Critical Analysis and Writing II is also required (per Academic Regulation 3.5 (p. 885)).

Graduation Requirements

1. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better in courses listed above as requiring a C or better.
3. The major engineering design experience, capstone course, is satisfied by ECEN 4013 Design of Engineering Systems and ECEN 4024 Capstone Design.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Electrical Engineering Technology

The electrical engineering technology (EET) curriculum provides preparation for outstanding career opportunities not only in the electrical and electronics industries, but also in many other sectors because of their dependence upon electricity and electronics for control, power, communications, and computation. The job responsibility of electrical engineering technology graduates ranges from application engineer, testing engineer, and field engineer. In addition, the graduates also work as design and development engineer and application development engineer for modern microprocessors .

The EET program offers a Bachelor of Science in Engineering Technology degree with a major in Electrical Engineering Technology. An option with an emphasis on computers and computing is also available. The program focuses on a hands-on laboratory-oriented curriculum to meet the diverse needs of modern industries. It provides a strong foundation of specialized mathematics, science, applied electrical engineering, and related technical courses, as well as courses in the area of written and oral communications, humanities, and the social sciences.

Program Educational Objectives

OSU Electrical Engineering Technology graduates a few years after graduation will:

- Show continuous career improvement, evidenced by assumption of greater responsibility or leadership, promotion, participation in continuing education or graduate studies, or transition into other technical or professional careers.
- Be able to work independently as well as collaboratively with others while demonstrating the professional and ethical responsibilities of the engineering profession.

Electrical Engineering Technology graduates can expect to obtain these student outcomes upon graduation:

Program Outcomes

(1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;

(2) an ability to design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline;

(3) an ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

(4) an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

(5) an ability to function effectively as a member of a technical team.

The *Electrical Engineering Technology major* provides graduates the ability to enter into many dynamic fields of electrical engineering and electrical technology. The demand for graduates having electronic and electrical engineering design and application skills continues to grow. Graduates of this program are prepared for a wide range of opportunities for employment in an industry that requires considerable knowledge of the electrical engineering and technology professions.

The *Electrical Engineering Technology–Computer option* curriculum provides the preparation for graduates to enter the growing field of computer hardware and software engineering. The demand for graduates having both computer hardware and software skills is of high demand as the intensity of automation, robotics, and artificial intelligence is growing.

The Electrical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

Undergraduate Programs

- Electrical Engineering Technology, BSET (p. 1574)
- Electrical Engineering Technology: Computer, BSET (p. 1576)

Faculty

Avimanyu Sahoo, PhD—Assistant Professor and Program Coordinator
Associate Professor: Imad Abouzahr, PhD, PE
Assistant Professors: Ellis C. Nuckolls, MS, PE; Huaxia Wang, PhD
Associate Professor (ENDEAVOR): Brian Norton, MS, PE

Electrical Engineering Technology, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 124

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History (or)	
HIST 1483	American History to 1865 (H) (or)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A)	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A)	3
or MATH 2153	Calculus II (A)	
STAT 4013	Statistical Methods I (A)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
PHYS 1114	College Physics I (LN)	4
or PHYS 2014	University Physics I (LN)	
Select 4 hours of any course designated (LN)		4
Social & Behavioral Sciences (S)		
SPCH 2713	Introduction to Speech Communication (S)	3
Additional General Education		
Any course with (A,N,S,H)		3
Any Foreign Language, Speech, any course from the Spears School of Business, any course designate (H), (D), (S), or (I)		3
Hours Subtotal		**44**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
ENGR 1111	Introduction to Engineering	1
Electronics		
ENGR 2421	Engineering Data Acquisition Controls Lab	1
EET 1104	Fundamentals of Electricity	4
EET 1244	Circuit Analysis I	4
EET 2303	Technical Programming	3
EET 2544	Pulse and Digital Techniques	4
EET 2635	Solid State Devices and Circuits	5
Hours Subtotal		**22**
Major Requirements		
EET 3113	Circuit Analysis II	3
EET 3124	Project Design and Fabrication	4
EET 3254	Microprocessors I	4
EET 3264	Microprocessors II	4
EET 3354	Communication and Signal Processing	4
EET 3363	Data Acquisition	3
EET 3524	Advanced Logic Circuits	4
EET 3533	Introduction to Telecommunications	3
EET 4314	Elements of Control	4
EET 4363	Digital Signal Processing	3
EET 4654	Microwave Techniques	4
EET 4833	Industrial Project Design I	3
EET 4843	Industrial Project Design II	3
EET 3423	Applied Analysis for Technology (or GENT 3123)	3
MGMT 3013	Fundamentals of Management (S)	3
or IEM 3503	Engineering Economic Analysis	
or IEM 3513	Economic Decision Analysis	
Select 6 hours from any courses in CEAT, any courses with a MATH or CS prefix, or any designated (N) courses.		6
Hours Subtotal		**58**
Total Hours		124

Graduation Requirements

1. A minimum Technical GPA of 2.00 is required. The Technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program or substitutions for these courses.
2. A minimum grade of "C" is required for all EET coursework.
3. Students may not enter into a subsequent EET course that has a prerequisite if the minimum "C" grade is not met in the prerequisite without consent of instructor.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.

- Degrees that follow this plan must be completed by the end of Summer 2026.

Electrical Engineering Technology: Computer, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 125

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History (or)	
HIST 1483	American History to 1865 (H) (or)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A)	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A)	3
or MATH 2153	Calculus II (A)	
STAT 4013	Statistical Methods I (A)	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
PHYS 1114	College Physics I (LN)	4
or PHYS 2014	University Physics I (LN)	
Select 4 hours of any course designated (LN)		4
Social & Behavioral Sciences (S)		
SPCH 2713	Introduction to Speech Communication (S)	3
Any course designated (A) (N) (S) (H)		3
Additional General Education		
Any Foreign Language, Speech, any course from the Spears School of Business, any course designate (H), (D), (S), or (I)		3
Hours Subtotal		**44**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
ENGR 1111	Introduction to Engineering	1
Electronics		
ENGR 2421	Engineering Data Acquisition Controls Lab	1
CS 1113	Computer Science I (A)	3
EET 1104	Fundamentals of Electricity	4
EET 1244	Circuit Analysis I	4
EET 2303	Technical Programming	3
EET 2544	Pulse and Digital Techniques	4
EET 2635	Solid State Devices and Circuits	5
Hours Subtotal		**25**
Major Requirements		
EET 3113	Circuit Analysis II	3
EET 3124	Project Design and Fabrication	4
EET 3254	Microprocessors I	4
EET 3264	Microprocessors II	4
EET 3354	Communication and Signal Processing	4
EET 3363	Data Acquisition	3
EET 3524	Advanced Logic Circuits	4
EET 3533	Introduction to Telecommunications	3
EET 4363	Digital Signal Processing	3
EET 4833	Industrial Project Design I	3
EET 4843	Industrial Project Design II	3
EET 3423	Applied Analysis for Technology (or GENT 3123)	3
MGMT 3013	Fundamentals of Management (S)	3
or IEM 3503	Engineering Economic Analysis	
or IEM 3513	Economic Decision Analysis	
Select 3 hours from any course in CEAT, any course with a MATH or CS prefix, or any designated (N) course.		3
CS 2133	Computer Science II	3
Select 6 hours of upper-division CS		6
Hours Subtotal		**56**
Total Hours		125

Graduation Requirements

1. A minimum technical GPA of 2.00 is required. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program or substitution for these courses.
2. A minimum grade of "C" is required for all EET coursework.
3. Students may not enter into a subsequent EET course that has a prerequisite if the minimum "C" grade is not met in the prerequisite without consent of instructor.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.

- Degrees that follow this plan must be completed by the end of Summer 2026.

Engineering and Technology Management

Master of Science in Engineering Technology Management

Dr. Sunderesh Heragu—Regents Professor, IEM Head, ETM Program Director and Humphreys Chair
Valerie Quirey—Graduate Programs Coordinator

OSU's Master of Science in Engineering Technology Management is a rigorous degree program designed specifically for experienced engineers and scientists who are interested in accelerating their management careers. The curriculum combines academic coursework with the latest business practices and can be tailored to meet an individual student's needs. Managing today's global organizations requires a complex set of knowledge and skills. Effective planning, selection, implementation and management of technology, and the teams involved, is essential to the success of any business in today's time-critical, global markets. OSU-MSETM students learn to apply proven evaluation concepts and implementation strategies to fast moving, technical management decisions that make the difference in both career and business success. The MSETM program specifically addresses the real needs identified by industry leaders. The MSETM curriculum permits you to build a strong degree that directly addresses your needs and prepares you for the future. The degree consists of 32 credit hours.

Please see the ETM website, https://etm.okstate.edu (https://etm.okstate.edu/), for more information about the program.

Program Educational Objectives

The OSU Engineering and Technology Management program exists to provide accessible, career-enhancing educational opportunities to practicing engineers, scientists and technical managers.

Program Student Learning Outcomes

ETM graduates will be able to:

1. View the organization systemically.
2. Critically analyze a management problem.
3. Identify and act on strategic issues.
4. Articulate and defend their ideas in a professional manner.

Admission Requirements

The guidelines for admission to the MSETM program are a bachelor's or higher degree, in engineering or the physical/mathematical sciences, with a 3.00 GPA, and professional employment in a related technical field since graduation with a bachelor's degree. Applicants not meeting these standards may be granted provisional admission based upon their overall academic and professional practice history and accomplishments. Because many course assignments are integrated into current aspects of the work environment, students must be managing or employed in a technical organization in order to be successful in the program. An applicant must submit the following documents:

1. OSU Application for Graduate Admission,
2. Official transcript of all academic work and degrees received,
3. Application fee ($50 domestic, $75 international),
4. MSETM program application,
5. A professional resume,
6. A statement of goals and objectives.

International applicants must also submit official results of the TOEFL with a minimum score of 89 IBT Application instructions can be found online at https://etm.okstate.edu (http://etm.okstate.edu/).

Degree requirements can be found at https://etm.okstate.edu (https://etm.okstate.edu/).

Fire and Emergency Management Program

Overview

Oklahoma State University's graduate program in Fire and Emergency Management Administration Program is one of the oldest programs in the nation. Students receive a superior academic experience in preparing leaders in the fire services, emergency management, emergency medical services, law enforcement, homeland security and related professions, as well as educators and researchers in these fields.

Students can complete degree requirements either online as distance students or as a resident on campus. Online Graduate courses typically meet in real time. Distance students join on-campus students in lecture, discussion, and group work, utilizing state of the art classrooms designed for distance education. The FEMP PhD program requires that a minimum of nine hours must be completed on campus in Stillwater, Oklahoma. This can be accomplished during one-week courses in the summer. FEMP MS students are encouraged to join at least one on-campus course.

The program was established in 1996 as a Master of Arts specialization in Fire and Emergency Management within political science. In 1999, the degree changed to the Master of Science in Fire and Emergency Management Administration. The curriculum includes public policy, strategic administration and organizational management, human dimensions of disaster, leadership, and terrorism.

In 2009, the Doctor of Philosophy in Fire and Emergency Management Administration was instituted. The PhD degree is designed to produce proficient and active research scholars. It emphasizes preparing talented individuals for faculty careers at major research-oriented academic institutions, but we also welcome applicants whose career interests may lean towards non-academic settings or academic institutions that stress teaching.

Regardless of their post-graduation plans, all PhD students are given the same standard of preparation. After all, it takes a competent research scholar to maintain currency in the field and provide their students or employers the best, most contemporary information the discipline has to offer.

Only July 1st, 2018 the Fire and Emergency Management Program moved to the College of Engineering Architecture and Technology as part of the Division of Engineering Technology. This move strengthened the relationship between the FEMP program and the other internationally known, fire-related programs at Oklahoma State University.

A major component of Oklahoma State University's land grant mission is service to community, state, and nation by preparing professionals for jobs in critical service sectors. The mission of the Fire and Emergency Management Administration Program is to prepare professionals for management positions in the critical service professions of fire and rescue, emergency management, emergency medical services, law enforcement, homeland security and related fields in both the public and private sectors. These professions are concerned with the mitigation of, preparedness for, response to, and recovery from the adverse effects of acute exposures to natural, technological, and social hazards. The program specializes in strategic policy, public management, and organizational behavior, human dimensions of disaster, leadership, and counter-terrorism. It also facilitates professional networking among its students and with leaders in the field. The curriculum is designed to provide students with theoretical and substantive knowledge about management structures and functions, analytical skills that enable the practical application of theories, research skills that enable critical analysis of real-world problems, and written communication skills necessary for effective management.

The Learning Outcomes for the Fire Emergency Management programs are that:

1. Graduates can demonstrate mastery of substantive theories in and knowledge of fire and emergency management administration and of its application to practical problems and issues in the field.

2. Graduates are able to conduct research and critically analyze problems in the fire and emergency management field.

3. Graduates can demonstrate effective written communication skills.

Undergraduate Programs

- Emergency Management, Minor (p. 1581)

Graduate Programs

The Fire and Emergency Management Program, housed in the CEAT Division of Engineering Technology offers a Master of Science degree in fire and emergency management administration, a PhD in fire and emergency management and administration, and an undergraduate minor in emergency management.

The MS and PhD in Fire and Emergency Management Administration are specialized degrees designed to provide an educational foundation for those who are currently serving or aspire to serve as managers or administrators in the fire service, emergency management, emergency medical services, law enforcement, or homeland security in the public, private, or nonprofit sectors.

Admission Requirements for Master's Degree Programs

Any student having a bachelor's degree with an overall 3.00 grade-point average (on a 4.00 scale) may be admitted as a student in full standing. Those with less than an overall 3.00 grade-point average are considered for admission on a probationary basis.

In addition to the general requirements outlined above, candidates for the Master of Science degree in fire and emergency management administration must meet one of the following requirements:

1. Have significant practical experience in a fire or emergency service organization.
2. Have a bachelor's degree or a minor in fire or emergency services related discipline such as fire protection technology, fire management administration, fire science, emergency management, disaster science, criminal justice, emergency services administration; or
3. Not meeting the criteria specified in 1 or 2 above, completed a minimum of 12 hours of undergraduate study in fire protection and/or emergency management, or provide significant proof that studies in another field led to knowledge and experience in fire or emergency services field, such as a final project related to fire or one of the emergency services listed above or an internship with a fire, emergency service, or law enforcement related organization in the public, private, or nonprofit sector.

A complete application for admission to the master's program must include:

1. A completed Graduate College application submitted with a non-refundable application fee.
2. A copy of undergraduate transcript(s).
3. Two letters of recommendation with at least one from an employer or faculty member familiar with the applicant's academic abilities.
4. TOEFL results for students for whom English is a second language. Students must have a score above 549 (paper exam) or 79 (internet based test) to be considered for admission.
5. A brief letter indicating interests, career goals and other information the applicant considers relevant.

Degree Requirements for the MS in Fire and Emergency Management Administration

In addition to the general requirements of the Graduate College, requirements for the Master of Science degree in fire and emergency management administration are listed below.

1. A minimum of 33 credit hours in FEMP or closely related courses. Required courses include a 12-hour core requirement, a three-hour methods requirement, a three-hour administration course requirement, a six-hour emergency management or fire administration requirement, and six or nine hours of electives. Students must complete a three-hour practicum research project or a thesis with a minimum of six hours. Most courses in the FEMP MS program are conducted in the department's state-of-the-art virtual classroom, where both on-site and off-site students participate simultaneously in the same class sessions.
2. Satisfactory completion of a final assessment project (either a Thesis or a Practicum).
3. Minimum 3.00 grade-point average, with only one grade of "C" allowed.

Admission Requirements for PhD in Fire and Emergency Management Administration

OSU Graduate College admission requirements include the following: an OSU Graduate College Application, payment of the OSU Graduate Application fee and transcripts of all previous college level coursework including transcripts that verify receipt of an undergraduate and graduate master's degree.

1. GPA: minimum cumulative GPA of 3.0.
2. GRE: Scores from the Graduate Record Examination taken within the past 5 years.
3. Professional experience in a fire or emergency services related field is preferred, but not required.
4. Academic experience in a fire or emergency services related field is preferred. If applicant has a degree outside of the fire or emergency services related field, they should spend time explaining how their academic background (i.e. degree, courses, research) has prepared them for the pursuit of a PhD in Fire and Emergency Management Administration.
5. English Language Proficiency: For international students, a minimum TOEFL score of 79 (Internet) and 550 (paper) is required.
6. A current resume
7. Three letters of recommendation: At least two letters must come from individuals who can speak directly to the applicant's abilities in the classroom and conducting research (i.e. faculty members).
8. An essay: This 1-2 page essay should address the applicant's previous professional and academic experience and how it has prepared them to seek a PhD in Fire and Emergency Management Administration. Candidates should also address their 5 and 10 year goals, discuss their research interests, and explain how the FEMP program and faculty can help them reach their goals and develop their research interests.
9. Copy of the applicant's thesis or other written example of applicant's research abilities.
10. Copies of any published materials authored by the candidate.

Degree Requirements for the PhD in Fire and Emergency Management Administration

Degree candidates must have completed a master's degree. In addition, they must complete 60 hours of required common coursework that includes 15 hours in core courses, 12 hours of research tools, 18 hours of elective courses closely aligned with their academic and research interests, and 15 hours of dissertation research. Finally, candidates must take written and oral comprehensive exams and must successfully defend their dissertation before their dissertation committee. Most courses in the FEMP PhD program are conducted in the department's state-of-the-art virtual classroom, where both on-site and off-site students participate simultaneously in the same class sessions.

Faculty

Haley Murphy, PhD—Assistant Professor and Program Coordinator
Assistant Professors: Tony McAleavy, PhD; Xiangyu (Dale) Li, PhD

Emergency Management (EM), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Division of Engineering Technology, 405-744-5638

Minimum Grade Point Average in Minor Coursework: 2.50 with no grade below "C."
Total Hours: 15 hours

Code	Title	Hours
FEMP 3103	Introduction to Emergency Management (S)	3
FEMP 3733	Emergency Management: Preparedness and Response	3
FEMP 3763	Emergency Management: Recovery and Mitigation	3
Choose 6 hours from the following:		6
POLS 2033	Introduction to Public Administration	
POLS 3493	Public Policy	
POLS 3613	State and Local Government	
POLS 3893	Terrorism & Counterterrorism	
SOC 4433	Environmental Sociology (S)	
SOC 4463	Technology and Society	
SOC 4493	Sociology of Environmental Hazards and Disasters	
FPST 1213	Fire Safety Hazards Recognition	
FPST 2153	Fire Protection Management	
FPST 4153	Issues in Local Government and Fire Services	
CIVE 3633	Transportation Engineering	
CIVE 3714	Introduction to Geotechnical Engineering	
IEM 2903	Introduction to Manufacturing and Service Systems	
IEM 4013	Operations Research	
IEM 4163	Service Systems and Processes	
BAE 3313	Natural Resources Engineering	
ENGR 4043	International Engineering Service Learning I (I)	
ENGR 4053	International Engineering Service Learning II (I)	
MGMT 4093	Management of Nonprofit Organizations	
MGMT 4163	Fundraising for Nonprofit Organizations	
Total Hours		15

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Fire Protection and Safety Engineering Technology

The fire protection and safety engineering technology (FPST) curriculum provides preparation for assessing and reducing the loss potential with respect to fire, safety, industrial hygiene and hazardous material incidents. With respect to fire, reducing the loss potential might involve setting design criteria with a special emphasis on life safety or fire resistivity or specifying automatic detection or extinguishing systems. When considering safety, reducing accidents may require special protective equipment or clothing, or the redesign of machinery or processes. Reducing losses caused by environmental problems may require sampling air for contaminants, such as asbestos or toxic chemicals, or monitoring noise levels, and the development of procedures to address practical approaches to compliance with state and federal regulations. Addressing the problems of handling and disposing of hazardous chemicals, such as spill control, is often required. Managing risk and compliance with federal laws and regulations relative to occupational safety and health and hazardous materials is an increasingly important job activity.

The fire protection and safety engineering technology program began at Oklahoma State University in 1937 - which is the oldest fire-related program in North America. The demand by business and industry for loss control specialists has resulted in the evolution of the program into one that now places emphasis on fire protection, safety and occupational/environmental health. The FPST program prepares graduates for careers in loss control. The loss control profession is segmented into three major areas: loss from fire, loss from physical accidents and loss from environmental exposure.

The curriculum is designed to immediately introduce the student to studies in fire protection and safety. Therefore, students are able to measure their interest in a fire protection and safety career early in their academic program. The curriculum is rigorous in the areas of mathematics and the physical sciences. Two semesters of calculus are required as well as a minimum one semester of chemistry and two semesters of physics. Computer usage is an essential component of most fire protection and safety courses. Interested high school students should design their high school programs to prepare themselves for college level mathematics and science classes.

The program concludes with the Bachelor of Science in Engineering Technology degree in Fire Protection and Safety Engineering Technology.

Program Educational Objectives

OSU Fire Protection and Safety graduates a few years after graduation will be:

1. Earning and pursuing personal, technical and professional advancement through their employment.
2. Continuing the pursuit of life-long learning through membership and participation in professional organizations.
3. Developing business expertise within their selected employment organization.
4. Successfully applying mathematical, analytical and technical skills to solve complex problems in the selected field.
5. Meeting the highest standards of ethical practice in their profession.

Fire Protection and Safety Technology degree graduates can expect to obtain these student outcomes upon graduation:

(1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;

(2) an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

(3) an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

(4) an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

(5) an ability to function effectively as a member as well as a leader on technical teams.

The graduates of the fire protection and safety engineering technology program at Oklahoma State University are consistently recruited by the major businesses and industries of the United States. Graduate placement, salary offers and advancement into managerial positions have been excellent due to the uniqueness and high technical quality of the OSU fire protection and safety engineering technology program.

The Fire Protection and Safety Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

Undergraduate Programs

- Fire Protection and Safety Engineering Technology, BSET (p. 1584)
- Safety and Exposure Sciences (SAES), Minor (p. 1586)

Graduate Programs

The Fire Protection and Safety Engineering Technology (FPST) program offers a graduate program leading to the Master of Science in Engineering Technology with an option in Fire Safety and Explosion Protection (FSEP). The program extends the FPST undergraduate program into graduate research, scholarship and creative activities. The FSEP program is designed to prepare students for professional practice that may include research or consulting components, with major emphasis in fields of interest such as fire protection engineering, explosion protection, fire and explosion hazards, and process safety. This is the nation's only master's degree program that is dedicated to both fire and explosion protection and related to safety. The program is geared toward recent graduates and professionals in a variety of industries, including insurance companies, the oil & gas industry, and fire protection engineering companies. The graduates of this program will have the deeper knowledge base that is needed to safeguard people in Oklahoma, the nation and world. The FSEP program is intended to be especially attractive to engineering and engineering technology graduates from any disciplines, and many science majors. The program is interdisciplinary in nature and hence students with undergraduate degrees in fire and safety related fields or other STEM disciplines are invited to apply for admission. Students can complete degree requirements either online as distance students or as a resident on campus.

Admission Requirements

Admission to the Master of Science degree program requires a B.S. degree in engineering or engineering technology from an ABET accredited (or equivalent) program. Alternately, B.S. students from other related disciplines may also be considered. Admission is competitive based on undergraduate GPA and TOEFL (for international students), statement of interests, experience and recommendations.

Degree Requirements

A candidate for the graduate degree must satisfy at least the minimum University requirements for that particular degree. The program consists of 30 hours of coursework with a thesis option or 32 hours of coursework with a non-thesis option. For both options, the courses taken must include GENT 5013, 5023, 5033 and FSEP 5113, 5133, 5143.

Faculty

Virginia Charter, PhD, PE— Associate Professor and Program Coordinator
Associate Professor and Graduate Advisor: Bryan Hoskins, PhD, PE
Associate Professor: Robert Agnew, PhD, CSP, CIH
Assistant Professors: Diana Rodriguez Coca, PhD; Haejun Park, PhD
Assistant Professor of Professional Practice: Leslie Stockel, MS, CSP
Teaching Assistant Professor: Timothy Wilson, MS, CSP
Assistant Dean of Engineering Extension and Adjunct Assistant Professor: Ed Kirtley, MS

Fire Protection and Safety Engineering Technology, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 125

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan.		
English Composition		
See Academic Regulation 3.5 (p. 885)		
Select one of the following:		3
ENGL 1113	Composition I	
ENGL 1123	International Freshman Composition I	
ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A)	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A)	3
or MATH 2153	Calculus II (A)	
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
PHYS 2014	University Physics I (LN)	4
PHYS 1214	College Physics II (LN)	4
or PHYS 2114	University Physics II (LN)	
Select one of the following:		4
CHEM 1414	General Chemistry for Engineers (LN)	
CHEM 1314 & CHEM 1515	Chemistry I (LN) and Chemistry II (LN)	
CHEM 1215 & CHEM 1225	Chemical Principles I (LN) and Chemical Principles II (LN)	
Social & Behavioral Sciences (S)		
Course designated (S)		3
Additional General Education		
Courses designated (A) or (N)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Engineering		
CET 2253	Printreading & BIM [1]	3
or ENGR 1322	Engineering Design with CAD	
Engineering Science		
ENSC 2113	Statics	3
or GENT 2323	Statics	
Select one of the following:		3
ENSC 2213	Thermodynamics	
MET 3433	Basic Thermodynamics	
MET 3453	Heat Transfer (OR MET 4433 Heat Transfer)	
ENGR 2400	Heat Transfer and Thermodynamics Lab	1
Specialty		
FPST 1213	Fire Safety Hazards Recognition	3
FPST 1373	Fire Suppression and Detection Systems	3
FPST 2023	Industrial and Occupational Safety	3
FPST 2243	Design and Analysis of Sprinkler Systems	3
FPST 2343	Elements of Industrial Hygiene	3
FPST 2483	Fluid Mechanics for Fire Protection	3
Hours Subtotal		**28**
Major Requirements		
Select one of the following: [2]		3
ENSC 2143	Strength of Materials	
GENT 3323	Strength of Materials	
ENSC 3313	Materials Science	
Select one of the following:		3
STAT 2013	Elementary Statistics (A)	
STAT 4013	Statistical Methods I (A)	
STAT 4033	Engineering Statistics	
Select one of the following:		3
STAT 3013	Intermediate Statistical Analysis	
STAT 4023	Statistical Methods II	
STAT 4043	Applied Regression Analysis	
MATH 2233	Differential Equations	
MATH 3013	Linear Algebra (A)	
IEM 3503	Engineering Economic Analysis	3
or IEM 3513	Economic Decision Analysis	
FPST 3013	Safety Management (S)	3
FPST 3143	Life Safety Analysis	3
FPST 3213	Human Factors in Accident Prevention	3
FPST 3373	Fire Dynamics	3
FPST 4143	Industrial Ventilation and Smoke Control	3
FPST 4333	System and Process Safety Analysis	3
FPST 4403	Hazardous Materials Incident Management	3
FPST 4683	Risk Control Engineering	3
Select one of the Following		4
FPST 4982 & FPST 4992	Fire Protection and Safety Projects I and Fire Protection & Safety Projects II	
FPST 4994	Fire Protection and Safety Interdisciplinary Projects	
Select 6-7 hours of specialty electives of the following: [1]		6
CET 4443	Construction Safety and Loss Control	

FEMP 3103	Introduction to Emergency Management (S)	
FEMP 3733	Emergency Management: Preparedness and Response	
FEMP 3763	Emergency Management: Recovery and Mitigation	
FPST and FSEP courses not used elsewhere.		
FRNS 5143	Methods in Fire and Explosion Investigation NFPA 921/1033	
ENGR 2400	Engineering Lab Topics	
ENGR 2421	Engineering Data Acquisition Controls Lab	
ENSC courses not used elsewhere (except ENSC 2213 if MET 3433 is used for Engineering Science Requirements)		
MET 3433	Basic Thermodynamics (Cannot be used if ENSC 2213 is used for Engineering Science Requirements)	
MET 3453	Heat Transfer (or MET 4433)	
MGMT 3133	Developing Leadership Skills	
Hours Subtotal		**46**
Electives		
Select 9 hours of upper-division controlled electives of the following:		9
CET 4443	Construction Safety and Loss Control	
FPST 3113	Advanced Special Hazard Suppression and Detection	
FPST 3383	Building Electrical Systems	
FPST 4213	Advanced Building Design and Analysis	
FPST 4383	Fire and Evacuation Modeling	
FPST 4233	Advance Exposure Assessment	
FRNS 5143	Methods in Fire and Explosion Investigation NFPA 921/1033	
Hours Subtotal		**9**
Total Hours		125

[1] Students who take ENGR 1322 instead of CET 2253 will need to take an extra hour of related specialty

Graduation Requirements

1. A minimum technical GPA of 2.00 is required. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program, or substitutions for the courses.
2. A grade of 'C' or better is required in each course that is a prerequisite to a required course that has an engineering or engineering technology prefix. A Grade of 'C' of better is also required in FPST 4683, FPST 4992 and FPST 4994.

Below are the courses that require a "C" using the 2020-2021 catalog but the prerequisites are subject to change.

Code	Title	Hours
CET 2253	Printreading & BIM	3
or ENGR 1322	Engineering Design with CAD	
CHEM 1414	General Chemistry for Engineers (LN)	4
ENGL 1113	Composition I	3
ENGL 3323	Technical Writing	3
ENSC 2113	Statics	3
or GENT 2323	Statics	
FPST 1213	Fire Safety Hazards Recognition	3
FPST 1373	Fire Suppression and Detection Systems	3
FPST 2023	Industrial and Occupational Safety	3
FPST 2243	Design and Analysis of Sprinkler Systems	3
FPST 2343	Elements of Industrial Hygiene	3
FPST 2483	Fluid Mechanics for Fire Protection	3
FPST 3013	Safety Management (S)	3
FPST 3373	Fire Dynamics	3
FPST 4683	Risk Control Engineering	3
FPST 4982	Fire Protection and Safety Projects I	2
FPST 4992	Fire Protection & Safety Projects II	2
FPST 4994	Fire Protection and Safety Interdisciplinary Projects	4
STAT 2013	Elementary Statistics (A)	3
or STAT 4013	Statistical Methods I (A)	
or STAT 4033	Engineering Statistics	
MATH 2123	Calculus for Technology Programs I (A)	3
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A)	3
or MATH 2153	Calculus II (A)	
MET 3433	Basic Thermodynamics (OR MET 4433)	3
or ENSC 2213	Thermodynamics	
or MET 3453	Heat Transfer	
PHYS 1114	College Physics I (LN)	4
or PHYS 2014	University Physics I (LN)	

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Safety and Exposure Sciences (SAES), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Virginia Charter, virginia.charter@okstate.edu, 545 Engineering North, 405-744-3237

Minimum Grade Point Average in Minor Coursework of 3.0 with no grade below "C."
Total Hours: 15 hours

Code	Title	Hours
Minor Requirements		
FPST 1213	Fire Safety Hazards Recognition	3
FPST 2023	Industrial and Occupational Safety	3
FPST 2343	Elements of Industrial Hygiene	3
Select 6 hours of the following:		6
AVED 3243	Human Factors in Aviation	
AVED 4113	Aviation Safety	
AVED 4943	Basic Aircraft Accident Investigation	
CIVE 3813	Environmental Engineering Science	
ENGR 4123	Tort and Products Liability Law for Technical Professionals (S)	
ENGR 4133	Environmental Regulation for Technical Professionals (S)	
CET 4443	Construction Safety and Loss Control	
FPST 3013	Safety Management (S)	
FPST 3213	Human Factors in Accident Prevention	
FPST 4143	Industrial Ventilation and Smoke Control	
FPST 4233	Advance Exposure Assessment	
FPST 4333	System and Process Safety Analysis	
IEM 3813	Work Design, Ergonomics, and Human Performance	
Total Hours		15

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Industrial Engineering and Management

Industrial engineering and management focuses on production systems that produce goods or provide services for customers. Industrial engineers define, design, build, operate and improve production processes that convert resources to high quality products or services effectively, efficiently and safely.

People are the fundamental component of production systems. People provide the creativity and leadership essential to make things happen. Hence, industrial engineering is the most people-oriented discipline within the engineering family. Industrial engineers are trained to think in both broad and specific terms. Practicing industrial engineers understand business parameters as well as physical and social parameters within production systems. This breadth allows industrial engineers to function effectively in a wide spectrum of activities ranging from strategic business planning to detailed task design. The wide-angle vision of industrial engineering provides career flexibility, leading to high-level leadership or specialized technical responsibilities.

Industrial engineers are employed in manufacturing organizations (e.g., automotive, electronics, food, and medical manufacturers), service enterprises (e.g., airlines, banks, consulting groups, hospitals, retail companies, theme parks, transportation companies, warehouses) and governmental organizations (e.g., public service and regulatory organizations).

Vision

IEM's vision is to place industrial engineers in a wide variety of industries including manufacturing, service, energy, healthcare, humanitarian and others, so that our society at large can benefit from systems that efficiently produce goods or provide services, effectively use an optimal set of resources and enrich the quality of life for all.

Mission

The School of Industrial Engineering and Management's mission is to develop professionals and leaders in industrial engineering and management by being a leader in education, research and outreach.

Core Values

Faculty, students and staff work together to build and maintain a learning/mentoring environment where:

- Innovative practices are developed, tested and validated.
- Knowledge and practices are shared.
- Each individual develops to his/her full potential.
- Professional ethics are practiced at all times.

Educational Objectives and Outcomes

Within a few years after graduation, Industrial Engineering program graduates will become professionals, managers or leaders in a wide variety of industries and apply discovery, problem-solving, leadership and management skills for the benefit of their organization and society at large.

Student Learning Outcomes

Graduating baccalaureate students possess an understanding of fundamental industrial engineering and management concepts, methodologies and technologies as demonstrated by:

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.

The curriculum consists of three primary parts:

1. general studies,
2. core engineering, and
3. professional school topics.

General studies consist of courses such as mathematics, statistics, chemistry, physics, English, behavioral science, history, humanities and arts. Core engineering courses consist of engineering sciences such as materials, statics, electrical circuits, fluid mechanics and thermodynamics. Professional school courses consist of topics such as systems thinking and analysis in engineering, economic analysis, manufacturing processes, computer-aided modeling, work analysis, operations research, quality control, experimental design, facility location and layout, management and leadership, production control, system simulation modeling, information systems, ergonomics and human factors, and energy and water management. A capstone design experience, working with a real-world organization, integrates classroom and lab work together in the senior year. Details regarding degree requirements are available in the Undergraduate Programs and Requirements publication.

The IEM program is accredited by the Engineering Accreditation Commission of ABET under the industrial engineering criteria.

Each IEM student, along with the faculty advisor, develops an individual plan of study that guides the student through the curriculum. Coursework is sequenced and interrelated to provide theoretical and applied knowledge, along with hands-on laboratory and project experience. Students work as individuals and as teams to integrate and apply mathematical, scientific, and engineering knowledge and concepts in order to address both traditional academic questions as well as open-ended design and analysis challenges. Instruction in experimental methods is integrated in the curriculum through the design, execution,

analysis and interpretation of experiments. Project work is used to develop both technical and communications skills. Technical skills are used to identify, formulate and address engineering problems, both simple and complex. Communications skills are developed and practiced in written, oral and team interaction formats.

The means to define and design detailed solutions to address customer needs from a system-wide perspective is introduced in the sophomore year, and reinforced through the capstone senior design project. Additionally, global perspectives or production systems are introduced and emphasized in the sophomore year so that students understand the nature of global customer bases as well as global competition early in their studies. The curriculum is continually updated to assure that contemporary issues, thinking and tools are integrated in course content as well as instructional delivery. Professional responsibility and ethical behavior are introduced and reinforced throughout the curriculum. Additionally, the need for life-long learning after graduation is stressed.

Students are offered opportunities to enhance their classroom and laboratory experiences through student organizations such as the student chapter of APICS, the Institute of Industrial and Systems Engineers, the Institute for Operations Research and the Management Sciences, and the American Society for Quality. Outstanding scholars are recognized by Alpha Pi Mu, the national honor society for industrial engineering students. Additionally, opportunities for internship and co-op experiences are offered to IEM students so that they can gain professional experience during their collegiate program. Please visit our Internet site http://iem.okstate.edu (http://iem.okstate.edu/) for more information.

Undergraduate Programs

- Data Analytics for Engineers (DAEN), Minor (p. 1589)
- Industrial Engineering and Management, BSIE (p. 1590)

Minors

- Data Analytics for Engineers (DAEN), Minor (p. 1589)

Graduate Programs

The School of Industrial Engineering and Management offers graduate programs leading to the Master of Science Industrial Engineering and Management degree and the Doctor of Philosophy degree.

The Master of Science degree is characterized by a higher degree of technical specialization in a particular field of study (beyond a BS degree). This degree program is designed to prepare students for professional practice that may include research or consulting components. The Master of Science degree is especially attractive to industrial engineering graduates, engineering graduates from other disciplines, and many science majors. The MS degree includes a strong technical component and an orientation to business and engineering management that is complementary to a technical background.

The Doctor of Philosophy degree is designed to position the student on the leading edge of knowledge in the profession of industrial engineering and engineering management. It is intended to prepare students for highly specialized positions, such as research and consulting in industry, government and service organizations, and for teaching or research positions in colleges and universities.

The basic consideration in graduate education in industrial engineering and management is effective and efficient utilization of human, physical and economic resources. Instruction in management embraces both qualitative and quantitative concepts, including analytical methodologies and social considerations pertinent to organizations.

Advanced degree programs are designed with major emphasis in fields of interest such as engineering management, manufacturing systems, operations research, quality and reliability, facilities and energy-management, and enterprise systems and supply chains. Students may complement industrial engineering and management courses with work in other branches of engineering, as well as economics, business administration, computer science, statistics, mathematics, psychology and sociology.

Admission Requirements

Admission to the Graduate College is required of all students pursuing the MS or PhD degree. Graduation from an industrial engineering curriculum with scholastic performance distinctly above average qualifies the student for admission to the School of Industrial Engineering and Management as a candidate for the master's and doctorate degrees. Graduates from related disciplines may be admitted if an evaluation of their transcripts and other supporting materials by the School of Industrial Engineering and Management indicates that they are prepared to take graduate-level course work in industrial engineering, or can be expected to do so after a reasonable amount of prerequisite work.

All applicants must submit GRE scores. In addition, the Graduate College may require certain international applicants to submit TOEFL scores.

Degree Requirements

The Master of Science degree in industrial engineering and management may be earned by one of two plans as follows:

Plan I—coursework with thesis. Minimum 30 credit hours consisting of 24 hours of coursework and 6 hours of research with a grade of "SR."

Plan II—coursework without thesis. Minimum of 33 credit hours. May include no more than three hours of independent study project.

The Doctor of Philosophy degree requires the completion of at least 90 credit hours beyond the bachelor's degree or 60 credit hours beyond the master's degree; including a minimum of 18 credit hours of dissertation research and a minimum of 30 credit hours of course work beyond the master's degree.

The School of Industrial Engineering and Management also participates in the Master of Science in Engineering and Technology Management program. Current IE&M program information can be found on the School website http://iem.okstate.edu.

Faculty

Sunderesh S. Heragu, PhD—Regents Professor and Head, Donald and Cathey Humphreys Chair
Professor and Wilson Bentley Chair: Balabhaskar Balasundaram, PhD
Professor: Manjunath Kamath, PhD
Associate Professors: Terry Collins, PhD, PE; Tieming Liu, PhD
Assistant Professors: Austin Buchanan, PhD, Juan Borrero, PhD; Katie Jurewicz, PhD; Chenang Liu, PhD; Joseph Nuamah, PhD; Bing Yao, PhD; Farzad Yousefian, PhD
Lecturers: Tim Hardin, PhD; Jennifer Glenn, PhD

Data Analytics for Engineers (DAEN), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Total Hours: 15 Hours

Minimum Overall Grade Point Average: 2.50 with a grade of "C" or better in each course submitted for the minor.

Code	Title	Hours
Select at least one course from each list:		15
Data Visualization		
EET 3363	Data Acquisition	
ENGR 2421	Engineering Data Acquisition Controls Lab	
Descriptive Analytics		
IEM 3103	Probability and Statistics for Engineers I	
IEM 4723	Information Systems Design and Development	
ECEN 4233	High Speed Computer Arithmetic	
STAT 4033	Engineering Statistics	
STAT 4023	Statistical Methods II	
STAT 4091	Sas Programming	
Data Analysis Tools		
CHE 4753	Introduction to Applied Numerical Computing for Scientists and Engineers	
CS 3513	Numerical Methods for Digital Computers	
MATH 4513	Numerical Analysis	
MATH 4553	Introduction to Optimization	
MATH 5553	Numerical Analysis for Linear Algebra	
MAE 3403	Computer Methods in Analysis and Design	
STAT 4191	R Programming	
STAT 4463	Statistical Machine Learning with R	
Prescriptive Analytics		
IEM 4013	Operations Research	
IEM 4113	Industrial Experimentation	
CHE 4002	Chemical Engineering Laboratory I	
CHE 4112	Chemical Engineering Laboratory II	
STAT 4073	Engineering Statistics with Design of Experiments	
Predictive Analytics		
IEM 4713	Systems Simulation Modeling	
IEM 4103	Quality Control	
STAT 4043	Applied Regression Analysis	
CHE 4493	Introduction to Molecular Modeling and Simulation	
STAT 5053	Time Series Analysis	
Total Hours		15

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Industrial Engineering and Management, BSIE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 123

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
or MATH 2233	Differential Equations	
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN)	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN)	4
Social & Behavioral Sciences (S)		
SPCH 2713	Introduction to Speech Communication (S)	3
Select 3 hours of any course designated (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College Requirements		
Basic Science		
PHYS 2114	University Physics II (LN)	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1322	Engineering Design with CAD	2
or ENGR 1332	Engineering Design with CAD for MAE	
ENGR 1412	Introductory Engineering Computer Programming	2
Engineering Science		
ENSC 2113	Statics	3
Select three of the following:		9
ENSC 2123	Elementary Dynamics	
ENSC 2143	Strength of Materials	
ENSC 2213	Thermodynamics	
ENSC 2613	Introduction to Electrical Science	
ENSC 3233	Fluid Mechanics	
Hours Subtotal		**21**
Major Requirements		
Mathematics		
MATH 3013	Linear Algebra (A)	3
Engineering Science		
ENSC 3313	Materials Science	3
Industrial Engineering & Management		
IEM 2903	Introduction to Manufacturing and Service Systems	3
IEM 3103	Probability and Statistics for Engineers I	3
IEM 3303	Manufacturing Processes	3
IEM 3403	Collaborative Engineering Project Management (With a grade of "C" or better)	3
IEM 3503	Engineering Economic Analysis	3
IEM 3523	Engineering Cost Information and Control Systems	3
IEM 3703	Probability and Statistics for Engineers II	3
IEM 3813	Work Design, Ergonomics, and Human Performance	3
IEM 4013	Operations Research	3
IEM 4103	Quality Control	3
IEM 4113	Industrial Experimentation	3
IEM 4203	Facilities and Material Handling System Design	3
IEM 4413	Industrial Organization Management	3
IEM 4613	Production Planning and Control Systems	3
IEM 4713	Systems Simulation Modeling	3
IEM 4723	Information Systems Design and Development	3
IEM 4913	Senior Design Projects	3
Select 3 hours of the following:		3
IEM 4163	Service Systems and Processes	
IEM 4623	Supply Chain Management	
IEM 4953	Industrial Assessment and Improvement	
IEM 4990	Selected Topics in Industrial Engineering and Management (3)	
Any 3000/4000 level CEAT course	Requires advisor approval	
Hours Subtotal		**60**
Total Hours		123

[1] If a “B” or higher is not earned in ENGL 1113 Composition I or ENGL 1313 Critical Analysis and Writing I, then ENGL 1213 Composition II or ENGL 1413 Critical Analysis and Writing II is also required (per Academic Regulation 3.5 (p. 882)).

Other Graduation Requirements

a. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses counting in the curriculum with an IEM prefix, or substitutions for these courses.

b. A grade of 'C' or better is required in each course that is a prerequisite to another required course and also in ENGR 1412, MATH 2163/MATH 2233 and PHYS 2114.

These courses include:

Code	Title	Hours
CHEM 1414	General Chemistry for Engineers (LN)	4-5
or CHEM 1515	Chemistry II (LN)	
ENGR 1111	Introduction to Engineering	1
ENGR 1322	Engineering Design with CAD	2
or ENGR 1332	Engineering Design with CAD for MAE	
ENGR 1412	Introductory Engineering Computer Programming	2
ENSC 2113	Statics	3
ENSC 3313	Materials Science	3
MATH 2144	Calculus I (A)	4
MATH 2153	Calculus II (A)	3
MATH 2163	Calculus III	3
or MATH 2233	Differential Equations	
MATH 3013	Linear Algebra (A)	3
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
IEM 2903	Introduction to Manufacturing and Service Systems	3
IEM 3103	Probability and Statistics for Engineers I	3
IEM 3403	Collaborative Engineering Project Management	3
IEM 3503	Engineering Economic Analysis	3
IEM 3703	Probability and Statistics for Engineers II	3
IEM 4013	Operations Research	3

c. The major engineering design experience is satisfied by IEM 4913 Senior Design Projects.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Materials Science and Engineering

The field of materials science and engineering is expanding into a period of unprecedented intellectual challenges, opportunities and growth. Products created using materials science and engineering research contribute to the economic strength and security of not only the state, but also the country.

The School of Materials Science and Engineering (MSE) is located at OSU-Tulsa Greenwood campus at the Helmerich Research Center, a premier facility which places the College of Engineering, Architecture and Technology in a unique position to conduct world-class education, research and technology development and transfer in advanced materials of strategic importance to our nation. Current research programs focus on materials for energy technologies, bio-materials for medical technologies, advanced materials for aerospace and defense, and materials for electronics and control technologies.

Program Educational Objectives

OSU is currently offering only a graduate program in Materials Science and Engineering.

Graduate Programs

The School of Materials Science and Engineering offers programs leading to the Master of Science and Doctor of Philosophy. A program of independent study and research on a project under the direction of a member of the Graduate Faculty will be satisfactorily completed by all graduate students. For the Master of Science candidate, the project may result in a thesis. For the Doctor of Philosophy candidate, the project results in a dissertation.

Four research areas of strategic importance have been identified at the Helmerich Advanced Technology Research Center (HRC) at OSU by industry leaders in and around Tulsa. These include: Materials for Energy Technologies, Bio-Materials for Medical Technologies, Advanced Materials for Aerospace, and Materials for Electronics and Control Technologies. All areas fall under the broad umbrella of the School of Materials Science and Engineering.

Admission Requirements

Admission to either the Master of Science or Doctor of Philosophy degree program requires graduation from a materials science and engineering or related curriculum approved by the ABET or a recognized equivalent from any international program.

Students with related undergraduate degrees, such as chemistry, physics, engineering physics, applied physics, etc., can be admitted conditionally, subject to completing prescribed Materials Science and Engineering program core courses. Admission is competitive based on undergraduate GPA, GRE and TOEFL (for international students), statement of interests, experience and recommendations.

The Master of Science Degree

The M.S. degree in MSE has both thesis and creative component (non-thesis) options. The thesis option requires a total of 30 credit hours, which includes 24 hours of formal coursework (regularly scheduled classes, not independent study) and 6 hours of a thesis. The non-thesis option or creative component requires a total of 35 credit hours, which includes 33 hours of formal coursework (regularly scheduled classes, not independent study) and 2 hours of a creative component or project.

The main difference between the two options is that in the thesis option, students conduct independent research while in the creative component option, students conduct critical review of the literature on an advanced topic of interest to the MSE program. Both options require a professional report or thesis and an oral presentation. Students take 15 hours of core courses (required) with the remainder of the hours being MSE elective courses or their equivalent (to be approved by MSE graduate coordinator and the thesis advisor or has been considered as an equivalent MSE course). Students must complete no less than 21 hours of MSE 5000- and 6000-level courses through Oklahoma State University. For both options the courses taken must include:

Code	Title	Hours
MSE 5013	Advanced Thermodynamics of Materials	3
MSE 5023	Diffusion and Kinetics	3
MSE 5033	Composite Materials	3
MSE 5043	Advanced Materials Characterization	3
MSE 5083	Advanced Ceramics Processing	3

The Doctor of Philosophy Degree

The general credit requirement is a minimum of 90 credit hours beyond the BS degree, including at least 36 hours of credit for research and at least 30 hours of class work. It is expected that the courses must include:

Code	Title	Hours
MSE 5013	Advanced Thermodynamics of Materials	3
MSE 5023	Diffusion and Kinetics	3
MSE 5033	Composite Materials	3
MSE 5043	Advanced Materials Characterization	3
MSE 5083	Advanced Ceramics Processing	3
MSE 5693	Phase Transformations in Materials	3
MSE 5113	Diffraction in Materials	3

Students are responsible for consultation with their doctoral advisory committee in preparing the plan of study. Furthermore, students have to pass the PhD qualifying exam and the dissertation proposal defense to become eligible for candidacy for the PhD Degree, successfully conduct independent research for the dissertation, and pass the final dissertation defense in order to qualify for the PhD degree. More details can be found in the MSE Graduate Student Handbook.

Faculty

Raman P. Singh, PhD—Associate Dean for Engineering at OSU-Tulsa and Director, Helmerich Research Center, Helmerich Family Endowed Chair Professor and Head
Regents Professor: Raj N. Singh, Sc.D.
Varnadow Endowed Professor: Ranji Vaidyanathan, PhD, PE
Professor: James Smay, PhD
Associate Professor: Pankaj Sarin, PhD
Assistant Professor: Do Young Kim, PhD
Assistant Research Professor: Nirmal Govindaraju, PhD
Adjunct Instructor: Srinivas Kolla, PhD

Mechanical and Aerospace Engineering

No other professions unleash the spirit of innovation like Mechanical Engineering and Aerospace Engineering. From research to real-world applications, mechanical and aerospace engineers discover how to improve lives by creating bold new solutions that connect science to life in unexpected, forward-thinking ways. Few have such a direct and positive effect on everyday lives and we count on mechanical and aerospace engineers, and their imaginations, to help us meet the needs of the 21st century.

Mechanical and aerospace engineers know that life takes engineering, and that their disciplines provide freedom to explore, shape the future, encompass an enterprising spirit and call for limitless imagination.

Engineering makes a world of difference and is essential to our health, happiness and safety. Creative problem solving, while turning dreams into reality, is the core of Mechanical and Aerospace Engineering. These professional disciplines involve the invention, design and manufacture of devices, machines and systems that serve the ever-changing needs of modern society.

Mechanical engineering is an exceedingly diverse field that spans an exceptionally wide range of systems, devices and vehicles. Mechanical engineers are vitally concerned with all forms of energy production, utilization and conservation. They are the key professionals in bringing about the green revolution, finding ways to reduce or eliminate pollution, minimize waste, reduce energy usage, and re-use waste, scrap and recycled goods. They deal with everything mechanical and energy-consuming, whether small or large, simple or complex—from fuel cells to nuclear power plants, gas turbine engines to interplanetary space vehicles, artificial limbs to life support systems, robotic manipulators to complex automatic packaging machines, precision instruments to construction machinery, household appliances to mass transit systems, heating and air-conditioning systems to off-shore drilling platforms, and powered home and garden appliances to vehicles of all types. In virtually every organization where engineers are employed, mechanical engineers will be found.

The BS degree program in mechanical engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) under the criteria for mechanical and similarly named engineering programs. Premedical and petroleum options are offered for the BS degree in mechanical engineering.

Aerospace engineering is concerned with the science and technology of flight, and the design of air, land and sea vehicles for transportation and exploration. This exciting field has led people to the moon and continues to lead in the expansion of frontiers deeper into space and into the ocean's depths. Because of their unique backgrounds in aerodynamics and lightweight structures, aerospace engineers are becoming increasingly involved in solving some of society's most pressing and complex problems, such as high-speed ground transportation and pollution of the environment. The BS degree program in aerospace engineering is accredited by the Engineering Accreditation Commission of the ABET under the criteria for aerospace and similarly named engineering programs.

MAE Mission

The mission of the School of Mechanical and Aerospace Engineering is to create a vibrant and stimulating learning and research environment and to instruct and encourage our students to reach their full potential in technical expertise, innovative expression, intellectual curiosity, and collaborative design.

MAE Mission for Undergraduate Instruction

The School of Mechanical and Aerospace Engineering will support the MAE and CEAT missions and the mission for instruction of Oklahoma State University by providing a first-class education to students that is grounded in engineering fundamentals. The Faculty of MAE are committed to preparing engineers who are:

- Competitive nationwide and internationally for employment opportunities and who will become respected achievers within their discipline.
- Well-prepared for the pursuit of advanced studies at any university.
- Prepared for a lifetime of continuing development, which is demanded by disciplines involved with rapidly progressing technology.

Rigor

The mechanical and aerospace engineering programs are among the most rigorous in the college, requiring broad knowledge and application of mathematics and the engineering sciences in addition to specialized knowledge and application of mechanical and aerospace engineering theory and design. The programs culminate in an intensive one-semester capstone design and rapid prototyping experience.

Program Educational Objectives

Program educational objectives are statements that describe the expected accomplishments and professional status of mechanical and aerospace engineering graduates three to five years beyond the baccalaureate degree. The School of Mechanical and Aerospace Engineering at Oklahoma State University is dedicated to graduating mechanical and aerospace engineers who:

1. Develop exemplary careers and become leaders to the greater benefit of society.
2. Earn a reputation as responsible and ethical professionals.
3. Develop innovative technologies and adapt to changing professional and societal norms with wisdom and integrity.

Student Outcomes and Specific Program Criteria

The student outcomes for students graduating from the mechanical and aerospace engineering BS programs are:

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;

ABET requires specific program criteria which must be supported by the curricula and are unique to engineering disciplines. For the BSME Program, the specific ME program criteria are broken into three elements. The ME curriculum prepares graduates to:

ME1- demonstrate an ability to apply principles of engineering, basic science and mathematics (including multivariate calculus and differential equations);

ME2- demonstrate an ability to model, analyze, design, and realize physical systems, components or processes; and

ME3 – be prepared to work professionally in either thermal or mechanical systems areas while taking courses in each area.

For the BSAE Program, the specific AE program criteria are also broken into three elements. The AE curriculum prepares graduates with:

1. AE1 – knowledge of the following aeronautical topics: aerodynamics, aerospace materials, structures, propulsion, flight mechanics, and stability and control;

2. AE2 – knowledge of some of the following astronautical topics: orbital mechanics, space environment, attitude determination and control, telecommunications, space structures and rocket propulsion; and

3. AE3 – graduates must have design competence which includes integration of aeronautical or astronautical topics.

Because mechanical engineering is perhaps the broadest of all engineering disciplines, the program provides not only excellent grounding in all engineering fundamentals, but also allows some flexibility in selecting controlled technical electives to suit the student's interests. In this selection, no one area may be unduly emphasized at the expense of another. For the aerospace engineering, biomedical engineering, and premedical programs, prescribed coursework provides students with more focused development. Graduates are fully competent as mechanical or aerospace engineers, with abilities in design, and in-depth knowledge in their areas of concentration.

As a fundamental component of all BS programs, engineering design is strongly emphasized in the junior and senior years but is integrated throughout the curriculum. Most MAE courses at the 3000- and 4000-levels include some design content, ranging from a minimum of one-half to a maximum of four credit hours of design content. Each professional school course builds upon the preceding mechanical and aerospace engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The coursework is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The coursework includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in a senior-year design course in which students integrate analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. The design experiences include the fundamental elements and features of design with realistic constraints such as economics, safety, reliability, social and environmental impact, and other factors. At this point, students are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. Students develop and display the ability to design and conduct experiments essential to specific studies and to analyze experimental results to draw meaningful conclusions.

An integral part of this educational continuum, from basic science through comprehensive engineering design, are learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. The program also provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students' experience in solving ever-more-challenging problems gives them the ability to continue to learn independently throughout their professional careers.

The broad background and problem-solving ability of mechanical and aerospace engineers make them suited to engage in one or more of the following activities: research, development, design, production, operation, management, technical sales and private consulting. Versatility is their trademark. A bachelor's degree in mechanical or aerospace engineering is also an excellent background for entering other professional schools such as medicine, dentistry, law or business (MBA). The premedical option in mechanical engineering is available for students wishing to enroll in medical school.

In the professional school, (essentially the junior and senior years of the program) mechanical and aerospace engineering students extend their study of the engineering sciences and consider applications of fundamental principles and analysis tools to the solution of real technological problems of society. Some design courses involve students in the solution of authentic, current and significant engineering problems provided by industrial firms. Students may also help smaller firms that need assistance with the development of new products.

The student designs, with the guidance of an advisor, an individualized program of study consistent with his or her interests and career plans. Some students terminate their studies with a bachelor's degree, while others receive one of several graduate degrees.

No other professions unleash the spirit of innovation like Mechanical Engineering and Aerospace Engineering. From research to real-world applications, mechanical and aerospace engineers discover how to improve lives by creating bold new solutions that connect science to life in unexpected, forward-thinking ways. Few have such a direct and positive effect on everyday lives and we count on mechanical and aerospace engineers, and their imaginations, to help us meet the needs of the 21st century.

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Mechanical engineering is an exceedingly diverse field that spans an exceptionally wide range of systems, devices and vehicles. Mechanical engineers are vitally concerned with all forms of energy production, utilization and conservation. They are the key professionals in bringing about the green revolution, finding ways to reduce or eliminate pollution, minimize waste, reduce energy usage, and re-use waste, scrap and recycled goods. They deal with everything mechanical and energy-consuming, whether small or large, simple or complex—from fuel cells to nuclear power plants, gas turbine engines to interplanetary space vehicles, artificial limbs to life support systems, robotic manipulators to complex automatic packaging machines, precision instruments to construction machinery, household appliances to mass transit systems, heating and air-conditioning systems to off-shore drilling platforms, and powered home and garden appliances to vehicles of all types. In virtually every organization where engineers are employed, mechanical engineers will be found.

The BS degree program in mechanical engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) under the criteria for mechanical and similarly named engineering programs. Premedical and petroleum options are offered for the BS degree in mechanical engineering.

Aerospace engineering is concerned with the science and technology of flight, and the design of air, land and sea vehicles for transportation and exploration. This exciting field has led people to the moon and continues to lead in the expansion of frontiers deeper into space and into the ocean's depths. Because of their unique backgrounds in aerodynamics and lightweight structures, aerospace engineers are becoming increasingly involved in solving some of society's most pressing and complex problems, such as high-speed ground transportation and pollution of the environment. The BS degree program in aerospace engineering is accredited by the Engineering Accreditation Commission of the ABET under the criteria for aerospace and similarly named engineering programs.

MAE Mission

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The School of Mechanical and Aerospace Engineering will support the MAE and CEAT missions and the mission for instruction of Oklahoma State University by providing a first-class education to students that is grounded in engineering fundamentals. The Faculty of MAE are committed to preparing engineers who are:

- Competitive nationwide and internationally for employment opportunities and who will become respected achievers within their discipline.
- Well-prepared for the pursuit of advanced studies at any university.
- Prepared for a lifetime of continuing development, which is demanded by disciplines involved with rapidly progressing technology.

Rigor

The mechanical and aerospace engineering programs are among the most rigorous in the college, requiring broad knowledge and application of mathematics and the engineering sciences in addition to specialized knowledge and application of mechanical and aerospace engineering theory and design. The programs culminate in an intensive one-semester capstone design and rapid prototyping experience.

Program Educational Objectives

Program educational objectives are statements that describe the expected accomplishments and professional status of mechanical and aerospace engineering graduates three to five years beyond the baccalaureate degree. The School of Mechanical and Aerospace Engineering at Oklahoma State University is dedicated to graduating mechanical and aerospace engineers who:

1. Develop exemplary careers and become leaders to the greater benefit of society.
2. Earn a reputation as responsible and ethical professionals.
3. Develop innovative technologies and adapt to changing professional and societal norms with wisdom and integrity.

Student Outcomes and Specific Program Criteria

The student outcomes for students graduating from the mechanical and aerospace engineering BS programs are:

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;

ABET requires specific program criteria which must be supported by the curricula and are unique to engineering disciplines. For the BSME Program, the specific ME program criteria are broken into three elements. The ME curriculum prepares graduates to:

1. ME1- demonstrate an ability to apply principles of engineering, basic science and mathematics (including multivariate calculus and differential equations);
2. ME2- demonstrate an ability to model, analyze, design, and realize physical systems, components or processes; and
3. ME3 – be prepared to work professionally in either thermal or mechanical systems areas while taking courses in each area.

For the BSAE Program, the specific AE program criteria are also broken into three elements. The AE curriculum prepares graduates with:

1. AE1 – knowledge of the following aeronautical topics: aerodynamics, aerospace materials, structures, propulsion, flight mechanics, and stability and control;
2. AE2 – knowledge of some of the following astronautical topics: orbital mechanics, space environment, attitude determination and control, telecommunications, space structures and rocket propulsion; and
3. AE3 – graduates must have design competence which includes integration of aeronautical or astronautical topics.

Because mechanical engineering is perhaps the broadest of all engineering disciplines, the program provides not only excellent grounding in all engineering fundamentals, but also allows some flexibility in selecting controlled technical electives to suit the student's interests. In this selection, no one area may be unduly emphasized at the expense of another. For the aerospace engineering, biomedical engineering, and premedical programs, prescribed course work provides students with more focused development. Graduates are fully competent as mechanical or aerospace engineers, with abilities in design, and in-depth knowledge in their areas of concentration.

As a fundamental component of all BS programs, engineering design is strongly emphasized in the junior and senior years but is integrated throughout the curriculum. Most MAE courses at the 3000- and 4000-levels include some design content, ranging from a minimum of one-half to a maximum of four credit hours of design content. Each professional school course builds upon the preceding mechanical and aerospace engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The coursework is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The coursework includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in a senior-year design course in which students integrate analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. The design experiences include the fundamental elements and features of design with realistic constraints such as economics, safety, reliability, social and environmental impact, and other factors. At this point, students are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. Students develop and display the ability to design and conduct experiments essential to specific studies and to analyze experimental results to draw meaningful conclusions.

An integral part of this educational continuum, from basic science through comprehensive engineering design, are learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. The program also provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students' experience in solving ever-more-challenging problems gives them the ability to continue to learn independently throughout their professional careers.

The broad background and problem-solving ability of mechanical and aerospace engineers make them suited to engage in one or more of the following activities: research, development, design, production, operation, management, technical sales and private consulting. Versatility is their trademark. A bachelor's degree in mechanical or aerospace engineering is also an excellent background for entering other professional schools such as medicine, dentistry, law or business (MBA). The premedical option in mechanical engineering is available for students wishing to enroll in medical school.

In the professional school, (essentially the junior and senior years of the program) mechanical and aerospace engineering students extend their study of the engineering sciences and consider applications of fundamental principles and analysis tools to the solution of real technological problems of society. Some design courses involve students in the solution of authentic, current and significant engineering problems provided by industrial firms. Students may also help smaller firms that need assistance with the development of new products.

The student designs, with the guidance of an advisor, an individualized program of study consistent with his or her interests and career plans. Some students terminate their studies with a bachelor's degree, while others receive one of several graduate degrees.

Undergraduate Programs

- Aerospace Engineering, BSAE (p. 1598)
- Mechanical Engineering, BSME (p. 1600)
- Mechanical Engineering: Petroleum, BSME (p. 1602)
- Mechanical Engineering: Pre-Medical, BSME (p. 1604)

Graduate Programs

The School of Mechanical and Aerospace Engineering offers programs leading to the degree of Master of Science in Mechanical and Aerospace Engineering, and the degree of Doctor of Philosophy in Mechanical and Aerospace Engineering. Both of these degrees offer an option in Unmanned Aerial Systems and prepare the graduate for research and development positions in industry and government, or for the teaching profession in engineering. They are distinguished by the incorporation of a research component.

Students may select coursework and participate in research or design projects in the following areas: aerodynamics, aeroelasticity, biomedical engineering, design, computational mechanics, heat transfer dynamic systems and controls, fluid mechanics, materials, manufacturing processes, refrigeration, solid mechanics thermal and HVAC systems, unmanned aerial systems, and web handling systems. Students are encouraged to take courses in mathematics and science and in other fields of engineering which fit into their programs.

Admission Requirements

Admission to the Graduate College is required of all students pursuing the MS or PhD degree. Graduation from a mechanical or aerospace engineering curriculum accredited by ABET, with scholastic performance distinctly above average, qualifies the student for admission to the

School of Mechanical and Aerospace Engineering as a candidate for the MS and PhD degrees. Graduates from disciplines other than mechanical or aerospace engineering may be admitted if an evaluation of their transcripts by the School of Mechanical and Aerospace Engineering indicates they are prepared to take graduate-level coursework in mechanical or aerospace engineering, or can be expected to do so after a reasonable amount of prerequisite work.

Degree Requirements

All degree programs follow an approved plan of study designed to satisfy the individual goals of the student, while conforming to the general requirements of the School of Mechanical and Aerospace Engineering and the Graduate College.

The Master of Science degree program with the thesis option requires 24 credit hours of approved graduate-level coursework and a suitable research thesis of six credit hours. The non-thesis option requires 35 credit hours of which two must be for an acceptable, directed research activity that results in a written and oral report to the faculty.

A new Master of Engineering degree program is being introduced in the 2018-2019 academic year. This degree has a potential option in Unmanned Aerial Systems. This is a non-thesis degree plan that will require 24 core credit hours and 9 hours of controlled technical electives. A capstone requirement must be satisfied in an MAE 5000- or 6000-graduate-level course.

The Doctor of Philosophy degree requires a minimum of 60 credit hours beyond the master's degree, including a dissertation for which no more than 30 credit hours may be awarded.

Faculty

Daniel E. Fisher, PhD, PE—Professor and Head
Professor and Albert H. Nelson, Jr. Chair: Daniel E. Fisher, PhD, PE
Regents Professor and Herrington Chair in Advanced Materials: Don A. Lucca, PhD, Drhc, CMfgE
Regents Professor and OG&E Energy Technology Chair: J.D. Spitler, PhD, PE
Professor and Tom J. Cunningham Chair and Director, NASA Oklahoma Space Grant Consortium/ EPSCoR: Andrew S. Arena, Jr., PhD
Professor and John Hendrix Chair and Director, Unmanned Systems Research Institute: Jamey D. Jacob, PhD
Professor and Associate Dean, OSU-Tulsa, Helmerich Family Chair and Director, Helmerich Research Center: Raman P. Singh, PhD
Professors: Afshin J. Ghajar, PhD, PE (emeritus); James K. Good, PhD, PE (emeritus); Geir Hareland, PhD, PE (adjunct); Sandip Harimkar, PhD; Lawrence L. Hoberock, PhD, PE (emeritus); David G. Lilley, PhD, DSc, PE (emeritus); Richard L. Lowery, PhD, PE (emeritus); Christopher E. Price, PhD, PE (emeritus); Karl N. Reid, ScD (emeritus); Robert L. Swaim, PhD, PE (emeritus); Gary E. Young, PhD, PE (emeritus); Larry D. Zirkle, PhD, PE (emeritus)
Associate Professor and John Brammer Professorship: Brian R. Elbing, PhD
Associate Professor and Carroll M. Leonard Fellow: Arvind Santhanakrishnan, PhD
Associate Professors: Christian Bach, PhD; Frank W. Chambers, PhD, PE (emeritus); Jay C. Hanan, PhD; ; Christian Bach, PhD; James A. Kidd, PhD (clinical); James M. Manimala; Khaled A. Sallam, PhD; Shuodao Wang, PhD
Assistant Professors: Aurelie Azoug, PhD; He Bai, PhD; Jacob Bair, PhD; Craig Bradshaw, PhD; Nicoletta Fala, PhD; Imraan Faruque, PhD; Jerome Hausselle, PhD; Rushikesh Kamalapurkar, PhD; Kursat Kara, PhD, PhD; Hadi Noori, PhD; Ryan C. Paul, PhD; Kurt P. Rouser, PhD; Ritesh Sachan, PhD; Omer San, PhD; Yujiang "Mike" Xiang, PhD
Lecturers: Joseph P. Connor, Jr. (adjunct assistant professor); Ronald D. Delahoussaye, PhD (adjunct professor); Ehsan Moallem, PhD (adjunct assistant professor); Laura Southard (adjunct assistant professor)
Research Professor and Director, New Product Development Center: Robert M. Taylor, PhD

Aerospace Engineering, BSAE

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 123

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II [1]	
ENGL 1413	Critical Analysis and Writing II [1]	
ENGL 3323	Technical Writing [1]	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A) [1]	3
MATH 2163	Calculus III [1]	3
MATH 2233	Differential Equations [1]	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN) [1]	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN) [1]	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2114	University Physics II (LN) [1]	4
Select one of the following:		3
ASTR 1013	The Solar System (N)	
ASTR 1023	Stars, Galaxies, Universe (N)	
BIOL 1114	Introductory Biology (LN)	
CHEM 3053	Organic Chemistry I	
GEOL 1114	Physical Geology (LN)	
GEOL 3413	Petroleum Geology for Engineers	
PHYS 3213	Optics	
PHYS 3313	Introduction to Semiconductor Device Physics	
PHYS 3713	Modern Physics	
Engineering and Engineering Science		
ENGR 1111	Introduction to Engineering [1]	1
ENGR 1332	Engineering Design with CAD for MAE [1]	2
ENGR 1412	Introductory Engineering Computer Programming [1]	2
ENGR 2421	Engineering Data Acquisition Controls Lab [1]	1
ENSC 2113	Statics [1]	3
ENSC 2123	Elementary Dynamics [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
ENSC 2143	Strength of Materials [1]	3
ENSC 2213	Thermodynamics [1]	3
ENSC 2613	Introduction to Electrical Science [1]	3
Hours Subtotal		**29**
Upper Division Major Requirements [2]		
ENSC 3231	Fluids and Hydraulics Lab	1
ENSC 3313	Materials Science	3
MAE 3013	Engineering Analysis and Methods I	3
MAE 3153	Introduction to MAE Design	3
MAE 3253	Applied Aerodynamics and Performance	3
MAE 3293	Fundamentals of Aerodynamics	3
MAE 3333	Fundamental Fluid Dynamics	3
MAE 3324	Mechanical Design I	4
MAE 3403	Computer Methods in Analysis and Design	3
MAE 3724	Dynamic Systems Analysis and Introduction to Control	4
MAE 4223	Aerospace Engineering Laboratory	3
MAE 4243	Aerospace Propulsion and Power	3
MAE 4283	Aerospace Vehicle Stability and Control	3
MAE 4374	Aerospace System Design	4
MAE 4513	Aerospace Structures	3
IEM 3503	Engineering Economic Analysis	3
Upper Division Elective Requirements		
3 hours of technical elective to be selected from the following list:		3
3000-level or above from:		
BCOM 3223	Oral Communication	
MATH 3303	Advanced Perspectives on Functions and Modeling for Secondary Teachers	
MGMT 3133	Developing Leadership Skills	
PHIL 3803	Business Ethics (H)	
PHIL 3833	Biomedical Ethics (H)	
Or from BAE, BIOL, BIOC, CHE, CHEM, CIVE, CS, ECEN, IEM, GEOL, LSB, MAE, PETE, or PHYS		
4000-level or above courses from:		
ECON 4113	Energy Economics: Traditional and Renewable Energy Markets	
MGMT 4073	Management and Ethical Leadership	

MGMT 4533	Leadership Dynamics	
Or from MATH, MET, or STAT		
Hours Subtotal		**52**
Total Hours		123

[1] MAE requires grades of "C" or better in all prerequisite courses, their prerequisites, and courses that directly support ABET* student outcomes.

[2] Grades of "C" or higher in all Upper Division Major Requirements courses

* ABET is the Accreditation Board for Engineering and Technology, who accredits the BSAE degree.

Graduation Requirements

1. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better is required in each course that is designated with footnote 1 and footnote 2. In cases where there is a choice on a course that has footnote 1, the footnote applies to both courses.
3. The major engineering design experience, capstone course, is satisfied by MAE 4374 Aerospace System Design.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Mechanical Engineering, BSME

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 121

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II [1]	
ENGL 1413	Critical Analysis and Writing II [1]	
ENGL 3323	Technical Writing [1]	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A) [1]	3
MATH 2163	Calculus III [1]	3
MATH 2233	Differential Equations [1]	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN) [1]	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN) [1]	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2114	University Physics II (LN) [1]	4
Select one of the following:		3
ASTR 1013	The Solar System (N)	
ASTR 1023	Stars, Galaxies, Universe (N)	
BIOL 1114	Introductory Biology (LN)	
CHEM 3053	Organic Chemistry I	
GEOL 1114	Physical Geology (LN)	
GEOL 3413	Petroleum Geology for Engineers	
PHYS 3213	Optics	
PHYS 3313	Introduction to Semiconductor Device Physics	
PHYS 3713	Modern Physics	
Engineering and Engineering Science		
ENGR 1111	Introduction to Engineering [1]	1
ENGR 1332	Engineering Design with CAD for MAE [1]	2
ENGR 1412	Introductory Engineering Computer Programming [1]	2
ENGR 2421	Engineering Data Acquisition Controls Lab [1]	1
ENSC 2113	Statics [1]	3
ENSC 2123	Elementary Dynamics [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
ENSC 2143	Strength of Materials [1]	3
ENSC 2213	Thermodynamics [1]	3
ENSC 2613	Introduction to Electrical Science [1]	3
Hours Subtotal		**29**
Upper Division Major Requirements [2]		
ENSC 3231	Fluids and Hydraulics Lab	1
ENSC 3313	Materials Science	3
MAE 3013	Engineering Analysis and Methods I	3
MAE 3153	Introduction to MAE Design	3
MAE 3233	Heat Transfer	3
MAE 3333	Fundamental Fluid Dynamics	3
MAE 3324	Mechanical Design I	4
MAE 3403	Computer Methods in Analysis and Design	3
MAE 3524	Thermal Fluids Design	4
MAE 3724	Dynamic Systems Analysis and Introduction to Control	4
IEM 3503	Engineering Economic Analysis	3
Select 7 hours of the following 2 categories, selecting one course from each category so that both categories are represented:		7
Category I (Realization): [2]		
MAE 4243	Aerospace Propulsion and Power	
MAE 4263	Energy Conversion Systems	
MAE 4353	Mechanical Design II	
MAE 4363	Advanced Methods in Design	
MAE 4513	Aerospace Structures	
MAE 4623	Biomechanics	
MAE 4703	Design of Indoor Environmental Systems	
MAE 4713	Thermal Systems Realization	
MAE 4723	Refrigeration Systems Design	
Category II (Capstone Design): [2]		
MAE 4344	Design Projects	
MAE 4354	Aerospace Systems Design for Mechanical Engineers	
Upper Division Elective Requirements		
6 hours of MAE electives to be selected from the following list, or from courses in the Category I listed above, but not used to satisfy the category requirement:		6

MAE 3033	Design of Machines and Mechanisms	
MAE 3123	Manufacturing Processes	
MAE 3223	Thermodynamics II	
MAE 3253	Applied Aerodynamics and Performance	
MAE 3293	Fundamentals of Aerodynamics	
MAE 4053	Automatic Control Systems	
MAE 4063	Mechanical Vibrations	
MAE 4273	Experimental Fluid Dynamics	
MAE 4313	Advanced Processing of Engineered Materials	
MAE 4333	Mechanical Metallurgy	
MAE 4583	Corrosion	
MAE 4733	Mechatronics Design	
3 hours of technical elective to be selected from the following list (or from courses in the Category I listed above, but not used to satisfy the category requirement):		3
3000-level or above from:		
BCOM 3223	Oral Communication	
MATH 3303	Advanced Perspectives on Functions and Modeling for Secondary Teachers	
MGMT 3133	Developing Leadership Skills	
PHIL 3803	Business Ethics (H)	
PHIL 3833	Biomedical Ethics (H)	
Or from BAE, BIOL, BIOC, CHE, CHEM, CIVE, CS, ECEN, IEM, GEOL, LSB, MAE, PETE, or PHYS		
4000-level or above courses from:		
ECON 4113	Energy Economics: Traditional and Renewable Energy Markets	
MGMT 4073	Management and Ethical Leadership	
MGMT 4533	Leadership Dynamics	
Hours Subtotal		**50**
Or from MATH, MET, or STAT		
Total Hours		121

[1] MAE requires grades of "C" or better in all prerequisite courses, their prerequisites, and courses that directly support ABET* student outcomes.

[2] Grades of "C" or higher in all Upper Division Major Requirements courses and ME Realization Category course and Capstone Design Category course.

* ABET is the Accreditation Board for Engineering and Technology, who accredits the BSME degree.

Graduation Requirements

1. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better is required in each course that is designated with footnote 1 and footnote 2. In cases where there is a choice on a course that has footnote 1, the footnote applies to both courses.
3. The major engineering design experience, capstone course, is satisfied by MAE 4344 Design Projects or MAE 4354 Aerospace Systems Design for Mechanical Engineers.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Mechanical Engineering: Petroleum, BSME

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 130

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II [1]	
ENGL 1413	Critical Analysis and Writing II [1]	
ENGL 3323	Technical Writing [1]	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A) [1]	3
MATH 2163	Calculus III [1]	3
MATH 2233	Differential Equations [1]	3
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1414	General Chemistry for Engineers (LN) [1]	4
or CHEM 1515	Chemistry II (LN)	
PHYS 2014	University Physics I (LN) [1]	4
Social & Behavioral Sciences (S)		
Course designated (S)		3
Hours Subtotal		**42**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2114	University Physics II (LN) [1]	4
GEOL 3413	Petroleum Geology for Engineers	3
Engineering and Engineering Science		
ENGR 1111	Introduction to Engineering [1]	1
ENGR 1332	Engineering Design with CAD for MAE [1]	2
ENGR 1412	Introductory Engineering Computer Programming [1]	2
ENGR 2421	Engineering Data Acquisition Controls Lab [1]	1
ENSC 2113	Statics [1]	3
ENSC 2123	Elementary Dynamics [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
ENSC 2143	Strength of Materials [1]	3
ENSC 2213	Thermodynamics [1]	3
ENSC 2613	Introduction to Electrical Science [1]	3
Hours Subtotal		**29**
Upper Division Major Requirements [2]		
ENSC 3231	Fluids and Hydraulics Lab	1
ENSC 3313	Materials Science	3
MAE 3013	Engineering Analysis and Methods I	3
MAE 3153	Introduction to MAE Design	3
MAE 3233	Heat Transfer	3
MAE 3333	Fundamental Fluid Dynamics	3
MAE 3324	Mechanical Design I	4
MAE 3403	Computer Methods in Analysis and Design	3
MAE 3524	Thermal Fluids Design	4
MAE 3724	Dynamic Systems Analysis and Introduction to Control	4
IEM 3503	Engineering Economic Analysis	3
GEOL 4323	Applied Well Log Analysis for Engineers	3
PETE 4303	Petroleum Rocks and Fluids	3
PETE 4313	Drilling and Well Completions	3
PETE 4333	Production Engineering	3
PETE 4343	Reservoir Engineering and Well Testing	3
Select 7 hours of the following 2 categories, selecting one course from each category so that both categories are represented:		7
Category I (Realization): [2]		
MAE 4243	Aerospace Propulsion and Power	
MAE 4263	Energy Conversion Systems	
MAE 4353	Mechanical Design II	
MAE 4363	Advanced Methods in Design	
MAE 4513	Aerospace Structures	
MAE 4623	Biomechanics	
MAE 4703	Design of Indoor Environmental Systems	
MAE 4713	Thermal Systems Realization	
MAE 4723	Refrigeration Systems Design	
Category II (Capstone Design): [2]		
MAE 4344	Design Projects	
MAE 4354	Aerospace Systems Design for Mechanical Engineers	
Upper Division Elective Requirements		
3 hours of MAE electives to be selected from the following list, or from courses in the Category I listed above, but not used to satisfy the category requirement:		3
MAE 3033	Design of Machines and Mechanisms	
MAE 3123	Manufacturing Processes	
MAE 3223	Thermodynamics II	

MAE 3253	Applied Aerodynamics and Performance	
MAE 3293	Fundamentals of Aerodynamics	
MAE 4053	Automatic Control Systems	
MAE 4063	Mechanical Vibrations	
MAE 4273	Experimental Fluid Dynamics	
MAE 4313	Advanced Processing of Engineered Materials	
MAE 4333	Mechanical Metallurgy	
MAE 4583	Corrosion	
MAE 4733	Mechatronics Design	
Hours Subtotal		**59**
Total Hours		130

[1] MAE requires grades of "C" or better in all prerequisite courses, their prerequisites, and courses that directly support ABET* student outcomes.

[2] Grades of "C" or higher in all Upper Division Major Requirements courses and ME Realization Category course and Capstone Design Category course.

* ABET is the Accreditation Board for Engineering and Technology, who accredits the Petroleum, BSME degree.

Graduation Requirements

1. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better is required in each course that is designated with footnote 1 and footnote 2. In cases where there is a choice on a course that has footnote 1, the footnote applies to both courses.
3. The major engineering design experience, capstone course, is satisfied by MAE 4344 Design Projects or MAE 4354 Aerospace Systems Design for Mechanical Engineers.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Mechanical Engineering: Pre-Medical, BSME

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 135

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II [1]	
ENGL 1413	Critical Analysis and Writing II [1]	
ENGL 3323	Technical Writing [1]	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A) [1]	3
MATH 2163	Calculus III [1]	3
MATH 2233	Differential Equations [1]	3
Humanities (H)		
Select 3 hours designated (H) from PHIL [2]		3
Select 3 hours designated (H) from ENGL		3
Natural Sciences (N) [1]		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN) [1]	5
BIOL 1114	Introductory Biology (LN)	4
Social & Behavioral Sciences (S)		
Select 3 hours designated (S) from PSYC or SOC [2]		3
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
Basic Science		
PHYS 2014	University Physics I (LN) [1]	4
PHYS 2114	University Physics II (LN) [1]	4
CHEM 3053	Organic Chemistry I	3
BIOL 1604	Animal Biology	4
Engineering and Engineering Science		
ENGR 1111	Introduction to Engineering [1]	1
ENGR 1332	Engineering Design with CAD for MAE [1]	2
ENGR 1412	Introductory Engineering Computer Programming [1]	2
ENGR 2421	Engineering Data Acquisition Controls Lab [1]	1
ENSC 2113	Statics [1]	3
ENSC 2123	Elementary Dynamics [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
ENSC 2143	Strength of Materials [1]	3
ENSC 2213	Thermodynamics [1]	3
ENSC 2613	Introduction to Electrical Science [1]	3
Hours Subtotal		**37**
Upper Division Major Requirements [3]		
ENSC 3231	Fluids and Hydraulics Lab	1
ENSC 3313	Materials Science	3
MAE 3013	Engineering Analysis and Methods I	3
MAE 3153	Introduction to MAE Design	3
MAE 3233	Heat Transfer	3
MAE 3333	Fundamental Fluid Dynamics	3
MAE 3324	Mechanical Design I	4
MAE 3403	Computer Methods in Analysis and Design	3
MAE 3524	Thermal Fluids Design	4
MAE 3724	Dynamic Systems Analysis and Introduction to Control	4
CHEM 3112	Organic Chemistry Laboratory	2
CHEM 3153	Organic Chemistry II	3
IEM 3503	Engineering Economic Analysis	3
MICR 3033	Cell and Molecular Biology	3
Select 7 hours of the following 2 categories, selecting one course from each category so that both categories are represented:		7
Category I (Realization): [3]		
MAE 4243	Aerospace Propulsion and Power	
MAE 4263	Energy Conversion Systems	
MAE 4353	Mechanical Design II	
MAE 4363	Advanced Methods in Design	
MAE 4513	Aerospace Structures	
MAE 4623	Biomechanics	
MAE 4703	Design of Indoor Environmental Systems	
MAE 4713	Thermal Systems Realization	
MAE 4723	Refrigeration Systems Design	
Category II (Capstone Design): [3]		
MAE 4344	Design Projects	
MAE 4354	Aerospace Systems Design for Mechanical Engineers	
Upper Division Elective Requirements		
6 hours of MAE electives to be selected from the following list, or from courses in the Category I listed above, but not used to satisfy the category requirement:		6
MAE 3033	Design of Machines and Mechanisms	
MAE 3123	Manufacturing Processes	
MAE 3223	Thermodynamics II	

MAE 3253	Applied Aerodynamics and Performance
MAE 3293	Fundamentals of Aerodynamics
MAE 4053	Automatic Control Systems
MAE 4063	Mechanical Vibrations
MAE 4273	Experimental Fluid Dynamics
MAE 4313	Advanced Processing of Engineered Materials
MAE 4333	Mechanical Metallurgy
MAE 4583	Corrosion
MAE 4733	Mechatronics Design
The following are suggested, but not required:	
BIOC 3653	Survey of Biochemistry
BIOL 3023	General Genetics
BIOL 3204	Physiology
BIOL 4134	Embryology
CHEM 1314 is recommended with CHEM 1515 to meet the Oklahoma medical schools' requirement for 9 hours of inorganic chemistry	
Hours Subtotal	**55**
Total Hours	135

[1] MAE requires grades of "C" or better in all prerequisite courses, their prerequisites, and courses that directly support ABET* student outcomes.

[2] Denotes medical school requirements. PSYC 1113 Introductory Psychology (S) is recommended to satisfy (3) hours of (S) requirement. PHIL 3833 Biomedical Ethics (H) is recommended to satisfy (3) hours of (H) requirement.

[3] Grades of "C" or higher in all Upper Division Major Requirements courses and ME Realization Category course and Capstone Design Category course.

Note: The entrance requirements of medical schools of choice should be reviewed to ensure an application is competitive.

* ABET is the Accreditation Board for Engineering and Technology, who accredits the Pre-medical, BSME degree.

Graduation Requirements

1. A minimum Technical GPA of 2.00. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A "C" or better is required in each course that is designated with footnote 1 and footnote 3. In cases where there is a choice on a course that has footnote 1, the footnote applies to both courses.
3. The major engineering design experience, capstone course, is satisfied by MAE 4344 Design Projects or MAE 4354 Aerospace Systems Design for Mechanical Engineers.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Mechanical Engineering Technology

Mechanical Engineering Technology (MET) is the component of engineering that specializes in design and application. MET includes the broad areas of mechanical design, mechanical power and manufacturing. MET is applied in mechatronics, robotics, automotive manufacturing, computer-aided design and engineering, computer-aided manufacturing, agricultural machinery and processing, mining, shipbuilding, spacecraft, electronics manufacturing, food processing, aircraft metals and plastics production—nearly the entire spectrum of the industry. In the power areas, MET graduates are involved in vapor power cycles, gas power cycles, air conditioning, fluid power and power transmission. Manufacturing areas involving MET graduates include tool design, cost evaluation and control, plant operations, production planning and manufacturing methods.

An important element in MET is the use of laboratory experience as a teaching tool. The MET program has laboratories in mechatronics, fluid power, materials, fluid mechanics and applied thermal sciences, basic instrumentation, 3D printing, computer-aided design (CAD), Engineering (CAE), and manufacturing (CAM). A senior capstone design course, composed of student teams, integrates the knowledge and skills learned during their course of study. The latest computer software is provided and supported for the courses that MET students take. Where appropriate, laboratories with modern computer data acquisition systems and on-screen displays are available.

In addition to the required mechanical engineering technology courses, students are provided a solid foundation in algebra, trigonometry, calculus, physics, chemistry, computer science and entrepreneurship (as a minor).

Program Educational Objectives

The Mechanical Engineering Technology (MET) program at Oklahoma State University focuses on preparing graduates so that they are able to productively contribute at their workplace after a short introductory period. A graduate from the OSU MET program should be able to:

1. Employ the latest design and analysis tools in engineering and manufacturing.

2. Be a life-long learner through participation and membership in professional organizations, continuation of professional/graduate studies, and/or self-study.

3. Introduce new technologies and methods into their workplace to maximize value to their employer.

4. Work collaboratively in multi-disciplinary teams.

5. Demonstrate professionalism in the workplace by using the highest standards of ethics and personal integrity.

Student Outcomes

Students graduating from the MET program are expected to achieve the following outcomes (1-5):

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;

2. an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

3. an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

5. an ability to function effectively as a member as well as a leader on technical teams.

Preparation for a specific industrial function is accomplished by selecting courses that emphasize a given design area, such as fluid power, mechanical design, computer-aided design (CAD), power generation, and air conditioning and heating. Because the program focuses on the application of engineering principles to the pragmatic solution of problems, graduates are immediately productive with minimal on-the-job training, thus increasing their value to industry. Graduates of the MET program are prepared to function in the areas of product design, testing and evaluation; product application and maintenance field engineering; and technical sales and liaison. Industries employing MET graduates include manufacturing companies of all types (aircraft, automobile, compressor and turbine, fluid power manufacturers and others); energy companies (such as natural gas, electrical power generation, and the oil and gas industries); and service companies (transportation industry, architecture and professional engineering firms, and those supporting the oil and gas industry).

Companies utilizing the talents of MET graduates are diversified in their products, as well as geographical location, thus providing a variety of choices in respect to both type of work and place of residence and in diverse industrial, governmental and educational institutions.

The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

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The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/).

Undergraduate Programs

- Mechanical Engineering Technology, BSET (p. 1609)

Faculty

Chulho Yang, PhD, PE—Professor and Program Coordinator
Professors: Young Chang, PhD, PE, CFPS
Associate Professors: Aaron Alexander, PhD; Warren L. Lewis, MS
Assistant Professors: Hitesh Vora, PhD; Ilchung Park, PhD; Yuan Lin, PhD
Associate Professor of Professional Practice: Michael McCombs, PhD
Teaching Associate: Laura Emerson, MS

Adjunct Assistant Professor: Jeeyeon Hahn, PhD

Mechanical Engineering Technology, BSET

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 120-123

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 3323	Technical Writing [1]	3
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2123	Calculus for Technology Programs I (A)	3-4
or MATH 2144	Calculus I (A)	
MATH 2133	Calculus for Technology Programs II (A)	3
or MATH 2153	Calculus II (A)	
Humanities (H)		
Courses designated (H)		6
Natural Sciences (N) and Scientific Investigation (L)		
Select one of the following:		4-5
CHEM 1215	Chemical Principles I (LN)	
CHEM 1314	Chemistry I (LN)	
CHEM 1414	General Chemistry for Engineers (LN)	
PHYS 2014	University Physics I (LN)	4
PHYS 1214	College Physics II (LN)	4
or PHYS 2114	University Physics II (LN)	
Social & Behavioral Sciences (S)		
Select one of the following:		3
SPCH 2713	Introduction to Speech Communication (S)	
Additional General Education		
Preparation for Calculus (A) (or three hours of (A) or (N) or (S) if MATH 1813 is not needed)		3
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
Hours Subtotal		**42-44**
College/Departmental Requirements		
Specialty		
MET 2223	Geometric Dimensioning and Tolerancing with Computer-Aided Design [2]	3
MET 2313	Fundamentals of Hydraulic Fluid Power	3
MET 3543	Manufacturing Processes [3]	3
Related Specialty		
ENGR 1111	Introduction to Engineering	1
ENGR 1412	Introductory Engineering Computer Programming	2-3
or EET 1003	Introduction to Microcomputer Programming	
EET 1134	Fundamentals of DC Circuits	4
EET 1214	Fundamentals of AC Circuits	4
ENSC 2113	Statics	3
or GENT 2323	Statics	
Select one of the following		3
MET 1123	Technical Drawing and Basic CAD [4]	
ENGR 1322 & MET 1121	Engineering Design with CAD and Technical Graphics	
ENGR 1332 & MET 1121	Engineering Design with CAD for MAE and Technical Graphics	
ENSC 2141	Strength of Materials Lab	1
ENSC 3231	Fluids and Hydraulics Lab	1
ENGR 2421	Engineering Data Acquisition Controls Lab	1
ENGR 2400	Heat Transfer and Thermodynamics Lab	1
Hours Subtotal		**30-31**
Major Requirements		
ENSC 2143	Strength of Materials	3
or GENT 3323	Strength of Materials	
MET 3433	Basic Thermodynamics [5]	3
MET 3453	Heat Transfer [6]	3
MET 3003	Dynamics	3
MET 3113	Basic Instrumentation	3
MET 3313	Applied Fluid Mechanics	3
MET 3343	Physical Metallurgy	3
MET 4003	Machine Elements	3
MET 4103	Senior Design I	3
or MET 4133	Interdisciplinary Design I	
MET 4123	Senior Design II	3
or MET 4143	Interdisciplinary Design II	
IEM 3503	Engineering Economic Analysis	3
or IEM 3513	Economic Decision Analysis	
Select 9 hours of the following:		9
MET 3223	Geometric Dimensioning and Tolerancing	
MET 3353	Plastics	
MET 3413	Fundamentals of Pneumatic Fluid Power	
MET 3423	Intermediate Hydraulic Fluid Power	
MET 3573	Advanced Production Processes	
MET 3803	Fundamentals of Mechatronics	
MET 4023	Advanced Mechanical Computer-Aided Design	
MET 4033	Applied Vibration and Acoustics	
MET 4050	Advanced Mechanical Design	
MET 4113	Practical Computational Fluid Dynamics	
MET 4203	Finite Element Methods	

MET 4173	Additive Manufacturing: Materials, Methods and Applications	
MET 4303	Computer Integrated Manufacturing	
MET 4313	Electrohydraulics and Motion Control	
MET 4413	Ground Source Heat Pump Systems	
MET 4503	Petroleum Operations	
MET 4803	Mechatronics System Design	
MET 4993	Mechanical Engineering Technology Practice	
MET 4953	Industrial Assessment and Improvement	
Hours Subtotal		**42**
Electives		**6**
A total of 6 credit hours from the following with at least 3 being upper-division hours: Accounting, Astronomy, Biology, Chemistry, Computer Science, Engineering, Engineering Technology, Entrepreneurship and Emerging Enterprise, Finance, Geology, Legal Studies in Business, Management, Marketing, Mathematics, Physics and Statistics. [7]		
Hours Subtotal		**6**
Total Hours		120-123

1 If B or higher is not earned in ENGL 1113 Composition I or ENGL 1313 Critical Analysis and Writing I, ENGL 1213 Composition II or ENGL 1413 Critical Analysis and Writing II is also required (per Academic Regulation 3.5 (p. 882)).

2 MET 1223 also permitted.

3 MET 1213 or GENT 1223 also permitted.

4 GENT 1153 also permitted.

5 GENT 3433 is also permitted

6 MET 4433 or GENT 4433 is also permitted.

7 MATH 1513 can be taken here if a student needs to take MATH 1513 as a prerequisites for MATH 1813.

Graduation Requirements

1. A minimum average Technical GPA of 2.00 is required. The technical GPA is calculated from all courses counting in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A grade of 'C' or better is required in all courses with an analytical or natural science designation or engineering or engineering technology prefix.
3. Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made so long as the changes do not delay graduation or result in semester hours being added.
4. The minimum requirements for the Mechanical Engineering Technology degree is 120. In cases where two courses can meet a requirement and they have differing credit hours, the lower credit hour course is typically recommended. The alternatives are largely listed to facilitate transfer into the MET degree from other programs.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

School of Architecture

The School of Architecture, founded in 1909, offers professional degree programs in both architecture and architectural engineering. The integration of these programs through shared faculty, facilities and coursework is a major strength of the School. It is one of few such integrated programs in the United States, and as such produces graduates who are particularly prepared for the interdisciplinary nature of professional practice. The School of Architecture is a primary unit in the College of Engineering, Architecture and Technology, and therefore benefits from excellent state-of-the-art resources which significantly enhance the student experience.

Oklahoma State University graduates are recruited by the leading architectural and architectural engineering firms across the United States and beyond. School of Architecture graduates are routinely accepted into premier graduate schools in architecture and related fields. The Oklahoma State University School of Architecture is particularly proud of having among its alumni many of the leaders of the best firms in the country, an AIA Gold Medalist (the highest award given to an architect), and presidents of the American Institute of Architects (AIA), the National Architectural Accreditation Board (NAAB), and the National Council of Structural Engineering Associations (NCSEA).

Mission and Goals

Architecture is the creative blend of the art and science of designing a setting for human life. It is unique among today's professions in that its successful practice requires a blend of traits normally often considered less than compatible: human empathy, artistic creativity, technological competence, and organizational acumen and economic awareness. In contrast to other fine arts, architecture is rarely self-generated; it is rather a creative response to a stated or perceived human need. It must, therefore, be more user-oriented than fine art alone and more humane than pure science. Its design solutions are simultaneously subjective and objective, while striving to be functionally, technically and economically sound. Yet, in a seemingly insoluble contradiction, the keenest technological and economic functionality will fall far short of becoming architecture unless it also strongly appeals to spiritual and emotional values. When one thinks of the environment, one cannot help but see or recall architectural images: pyramids in Egypt, Greek and Roman temples, gothic cathedrals, medieval castles, industrial cities, modern skyscrapers and dwellings or entire cities which significantly express the culture and values of the people who live or lived there.

The mission of the School of Architecture is to cultivate a collaborative learning community focused upon critical thinking and ethical responsibility. To do so, the faculty embrace established fundamentals and encourage the exploration of emerging innovations in design. The vision of the school is to empower students to make creative contributions in the cause of architecture.

The School of Architecture endeavors to instill in each individual a sensitivity to human needs, a genuine concern for quality, integrity and high ideals, a positive attitude for life-long learning, and personal confidence in one's ability to make positive contributions to society.

The School's primary goal is to provide excellence in professional educational for students preparing to enter the private practice of architecture or architectural engineering, or affiliated disciplines. The School is proud to educate students that will become licensed professionals in their field and assume positions of leadership within the profession and society.

Accreditation

The School of Architecture offers two separately accredited professional degree programs. The Bachelor of Architecture degree, BArch, is accredited by the NAAB. The Bachelor of Architectural Engineering degree, BArchE, is accredited by the Accreditation Board for Engineering and Technology (ABET http://www.abet.org (http://www.abet.org/)) as an engineering program. Both programs require approximately five years of study to complete. In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB) is the sole agency authorized to accredit U.S. professional degree programs in architecture offered by institutions with U.S. regional accreditation. NAAB recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture and the Doctor of Architecture. A program may be granted an eight-year, three-year or two-year term of accreditation, depending on the extent of its conformance with established educational standards. Doctor of Architecture and Master of Architecture degree programs may require a pre-professional undergraduate degree in architecture for admission. However, the pre-professional degree is not, by itself, recognized as an accredited degree. The Oklahoma State University School of Architecture offers the following NAAB-accredited degree programs - BArch. (154 undergraduate credits).

The next NAAB accreditation visit will occur in 2025.
The next ABET accreditation visit will occur in 2021.

Architecture

Architecture is the complex synthesis of creatively solving problems involving both art and science through the disciplined orchestration of image-making, activity organization, technological applications, legal constraints and budgetary parameters which together express culture, enhance quality of life and contribute to the environment.

Education in architecture consists of on-campus classroom and studio courses, where the focus is on observation and experimentation, and hands-on learning. The intellectual climate stimulates inquiry, introduces principles and values, and teaches the discipline necessary to work in collaboration with others. The goal of the program is to educate future leaders within the architecture profession.

In the pre-professional portion of the architectural program (approximately two years of study), the focus is on the fundamental principles of design and technology supplemented by appropriate general education courses in English, social sciences, natural sciences, math and humanities. These courses allow students to assimilate a beginning knowledge base in architecture along with a broader liberal-based component to their education.

Students who demonstrate proficiency in this portion of the program by meeting a specific set of admission criteria are eligible for admission to the professional program in architecture.

The professional program in architecture (typically three years) builds on the knowledge acquired in the pre-professional curriculum. Students expand their design and problem-solving abilities through a sequential series of design studios informed by courses dealing with structure, systems and materials, building technology, the history and theory of architecture, and business and project management

principles. In addition students fully utilize the computer as a design and communication tool in the problem-solving process.

The design studio is the center of the School's educational program. It is the setting where students and faculty work most closely together, and where all specialized study and knowledge comes together as a synthesized study in design. The record of OSU students' achievements in the design studios is evidenced by the success in national and international architectural design competitions.

Architectural Engineering

Architectural engineering is a profession that combines the art and science known as architecture with a detailed knowledge of fundamental and applied engineering principles. In its broadest sense, it involves the creative application of science and technology to the design of structures meant for human occupancy. Architectural engineering differs from architecture in its focus upon the design of elements, systems and procedures for buildings, rather than the design of buildings themselves. Architectural engineers practice in a wide variety of professional engineering settings such as consulting firms, architectural firms, industrial or commercial organizations and governmental agencies.

The objective of the Bachelor of Architectural Engineering program is to provide a professional education to engineering students in building-related systems. OSU graduates possess broad-based knowledge, skills and judgment that prepare them to succeed in the profession of architectural engineering or in further studies at the graduate level. The program is designed to prepare students to contribute to society as professional engineers dealing with analysis, design and related activities within the construction industry. The program utilizes the broad resources of the University and a close relationship with the architectural program to provide in-depth understanding of professional engineering and sensitivity to other qualitative concerns related to the building environment faced by architectural engineers.

The primary focus of the architectural engineering program at OSU is the safe and economical design of technical systems used in buildings. Structural systems must withstand the various forces of nature such as gravity, winds and earthquakes while also accommodating users. These systems require a working knowledge of the mechanics of materials commonly used for building structures such as steel, timber and reinforced concrete. Within the major of Architectural Engineering, the School offers the option in Structural Engineering, and an option in Construction Project Management.

In the pre-professional portion of the architectural engineering program (approximately two years of study), the focus is on the underlying scientific and mathematical principles of engineering and basic design principles supplemented by appropriate general education courses in English, social sciences, natural sciences, math and humanities. These courses allow students to assimilate a beginning knowledge base in architecture and engineering along with a broader liberal-based component to their education. Students who demonstrate proficiency in this portion of the program by meeting a specific set of admission criteria are eligible for admission to the professional program in architectural engineering.

The professional program in architectural engineering (typically two to three years) builds on the scientific and architectural knowledge acquired in the pre-professional curriculum. Students acquire detailed technical engineering knowledge and problem-solving abilities through a series of progressively more detailed and comprehensive courses and studios.

Each architectural engineering course builds upon the preceding architectural engineering courses to develop in the student the ability to identify and solve meaningful architectural engineering problems. The coursework is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. This coursework includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect public safety. The program culminates in a capstone design course in which the students integrate analysis, synthesis and other abilities they have developed throughout the earlier portions of their study.

An integral part of this educational continuum from basic knowledge through comprehensive architectural engineering design are learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. Students are exposed to a wide variety of problems dealing with contemporary issues in many contexts. Moreover, the program provides every graduate with learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of the students' problem-solving process. Finally, the students' experience in solving ever-more-challenging problems provides them the ability to continue to learn independently throughout their professional careers.

The Architectural Engineering Program Educational Objectives expected of program graduates a few years after graduation are as follows. Graduates will:

- Be successful in pursuing a graduate degree if they choose to continue their education past a Bachelor's degree.
- Utilize their education in architectural engineering to contribute to society as licensed professional engineers;
- Excel in their careers, displaying leadership, initiative, and ethical character, technical ability, and engineering skills;
- Utilize the close relationship with the architecture program to develop a special ability to collaborate on interdisciplinary design teams
- Maintain membership in professional organizations, have an awareness of emerging technologies in the field, and have a positive attitude toward advancing their professional skills through life-long learning.

The architectural engineering program has adopted the following student 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.

The program outcomes were adopted with the concept that they would provide students with the educational experience necessary to successfully achieve the longer-term program educational objectives.

Undergraduate Curriculum

The programs in architecture and architectural engineering are approximately five years long and offer the professional degrees of Bachelor of Architecture and Bachelor of Architectural Engineering.

Professional and liberal study electives provide extensive opportunities for educational breadth and depth. Minor plans of study are also available from the School of Architecture; the Architectural History/Theory minor (ASHT), the Architecture and Entrepreneurship minor (ASAE). A twelve-credit hour Graduate Certificate focused upon the Integrative Design of the Building Envelope is also available.

Undergraduate Admission

Students who satisfy the University admission requirements and CEAT Admissions standards are eligible to enroll for the first two years of the program (pre-Professional School). Upon completion of these two years, the most qualified students are selected, upon application, by the School for admission to the upper division (Professional School). Admission is based upon academic achievement and professional potential. Admission criteria are subject to annual review by the School and may be obtained directly from the School.

Transfer students are required to furnish transcripts and course descriptions for previous classroom courses, as well as a portfolio with examples of previous studio work. Evaluation and enrollment by the School is on a course-by-course basis for all transfer students.

General Education

All students of OSU are required to complete 40 hours of general education coursework. English composition, American History, Political Science, Social Sciences, Basic Science and Mathematics are part of the General Education requirements. Some required coursework in History and Theory of Architecture can be used for General Education (H) credit.

Electives

Electives should be selected to comply with the appropriate undergraduate degree requirements for the program. (See 3.2 “Changes in Degree Requirements” in the “University Academic Regulations (http://catalog.okstate.edu/university-academic-regulations/)” section of the Catalog.) These requirements assure compliance with institutional and accreditation criteria.

Study Abroad

The School of Architecture is committed to preparing its graduates for the professional opportunities presented by the expanding global economy. As part of this preparation, the School requires all architecture students to participate in one of its summer study-abroad courses of at least four weeks in length. Students study, in an organized and disciplined fashion, major examples of modern and historic architecture, including urban issues in a range of places outside the United States. Analytic and artistic sketching skills, descriptive writing, and other forms of observational research and record keeping are important in these courses of study.

Alternatively, a student of Architecture may elect to spend a semester abroad, which would meet the conditions of the degree plan as well. At least a year before a student plans to study a semester abroad, foreign university program and coursework must be coordinated with the School of Architecture advisor and the OSU Study Abroad Office to ensure that courses taken abroad meet the requirements of the degree plan.

Experience has shown that participation in a study-abroad program significantly increases a student’s level of maturity, independent thinking, and cultural and social awareness of others. Knowing the values and accomplishments of other cultures also makes a student a better and more responsible citizen of his or her own country.

Faculty and Facilities

School of Architecture faculty have extensive academic and professional experience as successful practicing architects and architectural engineers. The faculty is diverse: one third are women, and one quarter are culturally diverse.

The school moved into the Donald W. Reynolds School of Architecture Building, a newly renovated facility in 2009, which provides spacious design studios, a large expanded architectural library, a day-lighting lab, workshops, classroom facilities and many other amenities. The Donald W. Reynolds School of Architecture Building received an AIA Oklahoma Honor Award recognizing it for outstanding design in 2011.

Computers

All School of Architecture students enrolled in either the architecture or architectural engineering programs are required to purchase a laptop computer as they enter the design studio sequence. Updated specifications for the computer and software are provided each year, and posted to the School’s website.

Student Work

Projects submitted for regular class assignments may be retained by the School for archival and accreditation purposes. All work not retained for this purpose will be returned to the student.

Student Body

Annual student enrollment is approximately 300 students.

Academic Advising

Students admitted to CEAT and who wish to study in the School of Architecture are advised by the Architecture Academic Advisor. The College’s Office of Student Academic Services also has the capability to provide advisement for all entering freshmen pre-professional architecture and architectural engineering students.

Each student is personally advised in the planning and scheduling of his or her coursework and is counseled and advised individually on matters of career choice, his or her activities at OSU, and on other academic matters. A digital academic file is created for each student at the time of initial enrollment.

Admission to Professional School

Students applying for admission to the Professional School must first meet the required criteria established for each program. Applicants will be selected based upon their performance in the First and Second Year Architecture and Architectural Engineering curricula. Particular courses in the curricula, which have proven to be good indicators of success in the two programs, will be factored with a multiplier to increase their influence in the selection procedure. To be considered for either program, applicants must:

1. Complete a minimum of 55 credit hours of coursework (applicable to the degree plan) prior to admission to professional school.
2. Complete the following required first- and second-year courses with a grade of 'C' or better.
   For the Architecture program:

1. For the Architectural Engineering program:

1. Achieve a grade of "C" or better in all required ARCH prefix courses, substitutes for ARCH prefix courses, and prerequisites for ARCH prefix courses.

The Selection Grade Point Average (SGPA) will be calculated for each applicant by multiplying course credit hours by the multiplier, multiplying by the numerical course grade and dividing by the total factored hours. For consideration of admission to the Architecture program, several of the listed courses will have multipliers applied in the calculation of the Selection GPA. See the School of Architecture website for the Professional School Admissions Policy and the SGPA worksheet.

Double Degree

Applicants wishing to enter into the Professional School in both the BArch and BArchE degree programs must apply for both programs and be accepted to each, independent of the other.

Declaration and/or Change of Program

When students apply to Professional School, they must indicate whether they are applying for the architecture program or the architectural engineering program. Further, architectural engineering applicants must indicate which degree option they wish to pursue. If changing programs, Architecture to Architectural Engineering or vice versa, a formal application and admission to the other program through the Professional School application and admission process is required.

Taking ARCH Prefix Courses When Not Admitted to Professional School

Students not admitted to Professional Schools may not enroll in any 3000-level or higher without prior permission of the instructor and Academic Advisor.

Transfer Students

Students wishing to transfer into Professional School of the OSU School of Architecture must apply for admission to the Professional School in the same manner as OSU students.

Completion of Required Pre-Professional School Courses

All students applying for admission to Professional School must satisfactorily complete all required courses for consideration by the end of the spring semester of the year of application.

Application and Notification Dates

Application for admission, readmission or transfer to the Professional School of Architecture and Architectural Engineering must be made by the last working day of April of the year of intended admission. Notification of selection decisions will normally be made soon after June 1st but not before a two-week period after Grade Reports have been received by the School—if there should be any problem with a grade that may impact acceptance to Professional School the student should contact the School immediately. Selected applicants must confirm acceptance of the offer of a position in Professional School by the date indicated in the letter of offer.

Reapplication

Applicants not admitted may reapply for admission to Professional School the following year; such applicants do not carry any priority or disadvantage but are included in the full application pool.

Graduation

Students will graduate with the Bachelor of Architecture or Bachelor of Architectural Engineering degree upon the successful completion of the requirements articulated on the degree sheet. Architectural Engineering students are encouraged to complete the Fundamentals of Engineering Exam before graduation. Architecture majors are encouraged to establish an NCARB record before graduation. It is important to note that the accredited degree is the first step toward professional licensure; internship experience hours and examination are needed post-graduation for a student to become a licensed architect or licensed professional engineer.

Undergraduate Programs

- Architectural Engineering: Construction Project Management, BEN (p. 1616)
- Architectural Engineering: Mechanical, Electrical and Plumbing, BEN (p. 1618)
- Architectural Engineering: Structures, BEN (p. 1620)
- Architecture, BAR (p. 1625)

- Architectural Studies: Architecture and Entrepreneurship (ASAE), Minor (p. 1622)
- Architectural Studies: Design (ASDS), Minor (p. 1623)
- Architectural Studies: History and Theory (ASHT), Minor (p. 1624)

Faculty

Suzanne D. Bilbeisi, MArch, AIA—Centennial Professor and Head
AT&T Professor and Associate Dean, CEAT Academic Affairs: Randy Seitsinger, MArch, FAIA
Professors: Mohammed Bilbeisi, MArch, RA; Khaled Mansy, PhD; Tom Spector, PhD, AIA
Associate Professors: Jeanne Homer, MArch, AIA; John Phillips, MArchE, PE; Seung Ra, MArch, AIA; Michael Rabens, PhD; Carisa Ramming,

MArchE, PE; Nathan Richardson, MArch, AIA; Awilda C. Rodriquez, MArch, RA; Paulo Sanza, MArch, RA; Jerry L. Stivers, MArch, AIA
Assistant Professors: Jay Yowell, MArch, AIA; Keith Peiffer, MArch, AIA; Christina McCoy, MArchE,SE, RA; Jared Macken, Dr. Sc.; Sarah Ra, MArch, AIA, NCIDQ

Architectural Engineering: Construction Project Management, BEN

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 140

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A)	3
Humanities (H)		
ARCH 2003	Architecture and Society (HI)	3
Select 3 hours:		3
ARCH 3083	History and Theory of Renaissance and Baroque Architecture (H)	
ARCH 4173	History and Theory of Skyscraper Design (H)	
ARCH 4293	The Ethics of the Built Environment (H)	
ARCH 4374	International Field Study (HI)	
Any other ARCH course (H)		
ART 3603	History of Classical Art (H)	
ART 3623	History of Italian Renaissance Art (H)	
ART 3633	History of Baroque Art (H)	
Any upper-division HIST (H)		
Natural Sciences (N)		
CHEM 1414	General Chemistry for Engineers (LN)	4
PHYS 2014	University Physics I (LN) [1]	4
PHYS 2114	University Physics II (LN)	4
Three additional hours of (N)		3
Social & Behavioral Sciences (S)		
Any lower division course designated (S)		3
Diversity (D)		
Any course designated (D)		
Students are encouraged to meet the requirement in their selection of (H) or (S) course work		
International Dimension (I)		
ARCH 2003 meets the (I) requirement.		
Scientific Investigation (L)		
Any course designated (L). Normally met by Natural Sciences and/or Basic Science requirements.		
Hours Subtotal		**43**
College/Departmental Requirements		
Architecture		
ARCH 1112	Introduction to Architecture [1]	2
ARCH 1216	Architectural Design Studio I [1]	6
ARCH 2116	Architectural Design Studio II [1]	6
ARCH 2252	Design Communication I: Visual and Graphic Acuity [1]	2
ARCH 2263	Building Systems [1]	3
Engineering Science		
ENGR 1412	Introductory Engineering Computer Programming [1]	2
ENSC 2113	Statics [1]	3
ENSC 2143	Strength of Materials [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
Hours Subtotal		**28**
Major Requirements/Professional School		
Admitted to Professional School of Architecture (see requirements for admission to the upper-division)		
Architecture		
ARCH 3043	Structural Loadings in Architecture	3
ARCH 3262	Design Communication II: Advanced Digital Applications	2
ARCH 3323	Structures: Steel I	3
ARCH 4093	Architectural Project Management	3
ARCH 4123	Structures: Concrete I	3
ARCH 4143	Structures: Foundations for Buildings	3
ARCH 4163	Architecture Science 1: Thermal Systems and Life Safety for Architectural Engineers	3
ARCH 4263	Architecture Seminar	3
ARCH 4433	Architectural Science II: Acoustics, Lighting, and Service Systems for Architectural Engineers	3
ARCH 5023	Masonry Design and Analysis	3
ARCH 5226	Architectural Engineering Comprehensive Design Studio	6
Civil Engineering		
CIVE 3623	Engineering Materials Laboratory	3
CIVE 4183	Construction Estimating	3
or CIVE 4103	Construction Simulation	
or CIVE 4113	Construction Business Management	
or CIVE 4133	Construction Contracts and Specifications	
CIVE 4273	Construction Engineering and Project Management	3
CIVE 4711	Basic Soils Testing Laboratory	1

Industrial Engineering & Management		
IEM 3503	Engineering Economic Analysis	3
Engineering Science, Engineering		
ENSC 2123	Elementary Dynamics	3
ENSC 3313	Materials Science	3
Mathematics		
MATH 2163	Calculus III	3
MATH 2233	Differential Equations	3
Statistics		
STAT 4033	Engineering Statistics	3
Controlled Electives		
Select 6 credit hours from:		6
ARCH 2890	Honors for Topics in Architecture	
ARCH 3100	Special Topics in Architecture	
ARCH 4100	Special Topics in Architecture	
ARCH 4233	Sustainable Design in Architecture	
ARCH 4293	The Ethics of the Built Environment (H)	
ARCH 5023	Masonry Design and Analysis	
ARCH 5093	Real Estate Development	
ARCH 5193	Management of Architectural Practice	
ARCH 5493	Entrepreneurship and Architecture	
CIVE 5123	The Legal and Regulatory Environment of Engineering	
CIVE 5133	Construction Contracts and Specifications	
CIVE 5143	Project Engineering and Management	
CIVE 5153	Contract Administration	
CET 2263	Estimating I	
CET 3273	Scheduling Construction Projects	
CET 4263	Estimating II	
CET 4283	Business Practices for Construction	
Upper division ARCH, CIVE, CMT, or ENGR.		
Hours Subtotal		**69**
Total Hours		140

[1] Courses that must be completed prior to admission to professional school with a "C" or better.

Admission to Professional School (required)

- Refer to the OSU Catalog corresponding to your matriculation date for detailed admissions requirements.

Graduation Requirements

1. A minimum GPA of 2.00 Technical GPA. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A final grade of 'C' or better in all ARCH prefix courses, substitutions for ARCH prefix courses, and all non-ARCH prefix courses that are a prerequisite to an ARCH prefix course. The final grade of "C" is however not needed in the terminal courses in a series.
3. The capstone course for Architectural Engineering majors is ARCH 5226 Architectural Engineering Comprehensive Design Studio.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Architectural Engineering: Mechanical, Electrical and Plumbing, BEN

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 157

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A)	3
Humanities (H)		
ARCH 2003	Architecture and Society (HI)	3
Select 3 Hours		3
ARCH 3083	History and Theory of Renaissance and Baroque Architecture (H)	
ARCH 4173	History and Theory of Skyscraper Design (H)	
ARCH 4293	The Ethics of the Built Environment (H)	
ARCH 4374	International Field Study (HI)	
Any other ARCH (H)		
ART 3603	History of Classical Art (H)	
ART 3623	History of Italian Renaissance Art (H)	
ART 3633	History of Baroque Art (H)	
Any upper-division HIST (H)		
Natural Sciences (N)		
CHEM 1414	General Chemistry for Engineers (LN)	4
PHYS 2014	University Physics I (LN) [1]	4
Select one of the following		4
BIOL 1114	Introductory Biology (LN)	
CHEM 1314	Chemistry I (LN)	
CHEM 1515	Chemistry II (LN)	
GEOG 1114	Physical Geography (LN)	
GEOL 1014	Geology and Human Affairs (LN)	
GEOL 1114	Physical Geology (LN)	
Social & Behavioral Sciences (S)		
Consult the college & departmental requirements		
Any lower division course designated (S)		3
Any upper division course designated (S)		3
Hours Subtotal		**43**
Diversity (D)		
Any course designated (D)		
Students are encouraged to meet the requirement in their selection of (H) or (S) course work		
International Dimension (I)		
ARCH 2003 meets the (I) requirement		
Scientific Investigation (L)		
Any course designated (L). Normally met by Natural Sciences and/or Basic Science requirements.		
College/Departmental Requirements		
Engineering Science		
ENSC 2113	Statics [1]	3
ENSC 2143	Strength of Materials [1]	3
Architecture		
ARCH 1112	Introduction to Architecture [1]	2
ARCH 1216	Architectural Design Studio I [1]	6
ARCH 2116	Architectural Design Studio II [1]	6
ARCH 2216	Architectural Design Studio III [1]	6
ARCH 2263	Building Systems [1]	3
Hours Subtotal		**29**
Major Requirements/Professional School		
Admitted to Professional School of Architecture (see requirements for admission to the upper-division)		
Architecture		
ARCH 3223	Structures: Timbers	3
ARCH 3262	Design Communication II: Advanced Digital Applications	2
ARCH 3323	Structures: Steel I	3
ARCH 4093	Architectural Project Management	3
ARCH 4123	Structures: Concrete I	3
ARCH 4131	Architectural Science Lab	1
ARCH 4134		4
ARCH 4233	Sustainable Design in Architecture	3
ARCH 4263	Architecture Seminar	3
ARCH 4433	Architectural Science II: Acoustics, Lighting, and Service Systems for Architectural Engineers	3
ARCH 5226	Architectural Engineering Comprehensive Design Studio	6
Mechanical and Aerospace Engineering		
MAE 3223	Thermodynamics II	3
MAE 3233	Heat Transfer	3
Fire Protection and Safety Technology		
FPST 1373	Fire Suppression and Detection Systems	3
Industrial Engineering & Management		

IEM 3503	Engineering Economic Analysis	3
Engineering Science, Engineering		
ENSC 2123	Elementary Dynamics	3
ENSC 2213	Thermodynamics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3233	Fluid Mechanics	3
ENGR 1412	Introductory Engineering Computer Programming [1]	2
Mathematics		
MATH 2163	Calculus III	3
MATH 2233	Differential Equations	3
Statistics		
STAT 4033	Engineering Statistics	3
Natural Sciences (N)		
PHYS 2114	University Physics II (LN)	4
Controlled Electives		
Select 12 credit hours from:		12
ARCH 3100	Special Topics in Architecture	
ARCH 4100	Special Topics in Architecture	
FPST 2243	Design and Analysis of Sprinkler Systems	
FPST 2483	Fluid Mechanics for Fire Protection	
FPST 3143	Life Safety Analysis	
FPST 3383	Building Electrical Systems	
FPST 4143	Industrial Ventilation and Smoke Control	
MAE 3293	Fundamentals of Aerodynamics	
MAE 3403	Computer Methods in Analysis and Design	
MAE 4263	Energy Conversion Systems	
MAE 4273	Experimental Fluid Dynamics	
MAE 4703	Design of Indoor Environmental Systems	
MAE 4713	Thermal Systems Realization	
MAE 4733	Mechatronics Design	
Upper division ARCH, FPST, MAE, or ENGR.		
Hours Subtotal		**85**
Total Hours		**157**

[1] Courses that must be completed prior to admission to professional school.

Admission to Professional School (required)

- Refer to the OSU Catalog corresponding to your matriculation date for detailed admissions requirements.

Graduation Requirements

1. A final grade of 'C' or better in all ARCH prefix courses, substitutions for ARCH prefix courses, and all non-ARCH prefix courses that are a prerequisite to an ARCH prefix course.
2. The capstone course for Architectural Engineering majors is ARCH 5226 Architectural Engineering Comprehensive Design Studio.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Architectural Engineering: Structures, BEN

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 140

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
MATH 2153	Calculus II (A)	3
Humanities (H)		
ARCH 2003	Architecture and Society (HI)	3
Select 3 hours from the following:		3
ARCH 3083	History and Theory of Renaissance and Baroque Architecture (H)	
ARCH 4173	History and Theory of Skyscraper Design (H)	
ARCH 4293	The Ethics of the Built Environment (H)	
ARCH 4374	International Field Study (HI)	
Any other ARCH (H)		
ART 3603	History of Classical Art (H)	
ART 3623	History of Italian Renaissance Art (H)	
ART 3633	History of Baroque Art (H)	
Any other upper division HIST (H)		
Natural Sciences (N)		
CHEM 1414	General Chemistry for Engineers (LN)	4
PHYS 2014	University Physics I (LN) [1]	4
PHYS 2114	University Physics II (LN)	4
3 hours of (N)		3
Social & Behavioral Sciences (S)		
Select 3 hours lower division (S)		3
Hours Subtotal		**43**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
At least one Diversity (D) course		
At least one International Dimension (I) course		
College/Departmental Requirements		
Architecture		
ARCH 1112	Introduction to Architecture [1]	2
ARCH 1216	Architectural Design Studio I [1]	6
ARCH 2116	Architectural Design Studio II	6
ARCH 2252	Design Communication I: Visual and Graphic Acuity [1]	2
ARCH 2263	Building Systems [1]	3
Engineering Science		
ENSC 2113	Statics [1]	3
ENSC 2143	Strength of Materials [1]	3
ENSC 2141	Strength of Materials Lab [1]	1
ENGR 1412	Introductory Engineering Computer Programming [1]	2
Hours Subtotal		**28**
Major Requirements		
Architecture		
ARCH 3043	Structural Loadings in Architecture	3
ARCH 3143	Structures: Analysis I	3
ARCH 3343	Structures: Steel II	3
ARCH 3262	Design Communication II: Advanced Digital Applications	2
ARCH 3323	Structures: Steel I	3
ARCH 4433	Architectural Science II: Acoustics, Lighting, and Service Systems for Architectural Engineers	3
ARCH 4093	Architectural Project Management	3
ARCH 4123	Structures: Concrete I	3
ARCH 4143	Structures: Foundations for Buildings	3
ARCH 4163	Architecture Science 1: Thermal Systems and Life Safety for Architectural Engineers	3
ARCH 4263	Architecture Seminar	3
ARCH 4243	Structures: Concrete II	3
ARCH 5226	Architectural Engineering Comprehensive Design Studio	6
ARCH 5023	Masonry Design and Analysis	3
Civil Engineering		
CIVE 4711	Basic Soils Testing Laboratory	1
Industrial Engineering & Management		
IEM 3503	Engineering Economic Analysis	3
Engineering Science, Engineering		
ENSC 2123	Elementary Dynamics	3
ENSC 3313	Materials Science	3
Mathematics		
MATH 2163	Calculus III	3
MATH 2233	Differential Equations	3
Statistics		
STAT 4033	Engineering Statistics	3
Natural/Basic Science		
Hours Subtotal		**63**

Electives		
Select 6 credit hours from:		6
ARCH 2890	Honors for Topics in Architecture	
ARCH 3100	Special Topics in Architecture	
ARCH 4100	Special Topics in Architecture	
ARCH 4233	Sustainable Design in Architecture	
ARCH 5143	Structures: Special Loadings	
ARCH 6243	Structures: Analysis III	
ARCH 6343	Structures: Steel III	
ARCH 6543	Structures: Concrete III	
CIVE 3623	Engineering Materials Laboratory	
CIVE 3614	Engineering Surveying	
CIVE 5403	Advanced Strength of Materials	
CIVE 5433	Energy Methods in Applied Mechanics	
CIVE 5533	Prestressed Concrete	
CIVE 5573	Timber Design	
Upper division ARCH, FPST, MAE, or ENGR.		
Hours Subtotal		**6**
Total Hours		140

[1] Courses that must be completed prior to admission to professional school with a "C" or better.

Admission to Professional School (required)

- Refer to the OSU Catalog corresponding to your matriculation date for detailed admissions requirements.

Graduation Requirements

1. A minimum GPA of 2.00 Technical GPA. The Technical GPA is calculated from all courses in the curriculum with a prefix belonging to the degree program, or substitutions for these courses.
2. A final grade of 'C' or better in all ARCH prefix courses, substitutions for ARCH prefix courses, and all non-ARCH prefix courses that are a prerequisite to an ARCH prefix course. The final grade of "C" is however not needed in the terminal courses in a series.
3. The capstone course for Architectural Engineering majors is ARCH 5226 Architectural Engineering Comprehensive Design Studio.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.

Architectural Studies: Architecture and Entrepreneurship (ASAE), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Suzanne Bilbeisi, suzanne.bilbeisi@okstate.edu, 101 DWR Arch. Bldg, 405-744-6043

Minimum Overall Grade Point Average: 2.50 with no grade below "C."
Total Hours: 21 hours

Code	Title	Hours
Minor Requirements		
ARCH 5093	Real Estate Development	3
ARCH 5193	Management of Architectural Practice	3
ARCH 5493	Entrepreneurship and Architecture	3
Select six hours of the following:		6
ECON 3033	Economics of Entrepreneurship and Innovation	
LSB 3213	Legal and Regulatory Environment of Business	
MGMT 3013	Fundamentals of Management (S)	
MKTG 3213	Marketing (S)	
Six hours of Entrepreneurship (EEE) courses		6
Total Hours		21

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Architectural Studies: Design (ASDS), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Suzanne Bilbeisi, suzanne.bilbeisi@okstate.edu, 101 DWR Arch. Bldg, 405-744-6043

Minimum Overall Grade Point Average: 2.50 with no grade below "C."
Total Hours: 23 hours

Code	Title	Hours
Required Courses		
ARCH 1112	Introduction to Architecture	2
Select 12 hours of lower-division ARCH		12
Select nine hours of upper-division ARCH as approved by the advisor		9
Total Hours		23

Additional Requirements

- Students in the Bachelor of Architecture or Bachelor of Architectural Engineering majors are not eligible to receive this minor.

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Architectural Studies: History and Theory (ASHT), Minor

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Suzanne Bilbeisi, suzanne.bilbeisi@okstate.edu, 101 DWR Arch. Bldg, 405-744-9051

Minimum Overall Grade Point Average: 2.50 with no grade below "C."
Total Hours: 21 hours

Code	Title	Hours
Minor Requirements		
ARCH 2003	Architecture and Society (HI)	3
Select any six additional Architectural history/theory courses [1]		18
Total Hours		21

[1] May include ARCH 4373 Field Study in Europe I/ARCH 5373 Field Study in Europe II (European Program), ARCH 4374 International Field Study (HI) and/or ARCH 3373 Design and Diversity in Urban Centers of the US (Urban USA Program).

* Up to 6 hours of ART History and Theory coursework may be included, but must be approved by faculty.

Additional OSU Requirements

Undergraduate Minors

- An undergraduate minor must include between fifteen and thirty hours, inclusive of undergraduate coursework.
- A minimum of six credit hours for the minor must be earned in residence at OSU.
- The courses required for a minor may be included in the course requirements for any undergraduate degree or they may be in addition to degree requirements, depending on the overlap between the minor and degree requirements. However, an undergraduate minor must be earned in an academic field other than the student's declared degree option. The minor may not duplicate the degree major or option (for example, a student who earns a BA in Art with an Art History option may earn a minor in Studio Art but not Art History).
- A student generally follows the minor requirements associated with his or her matriculation year or newer requirements that have been established since matriculation. The time limit for following requirements from a given academic year is six years.

For additional information on requirements on minors, click here (https://adminfinance.okstate.edu/site-files/documents/policies/requirements-for-undergraduate-and-graduate-minors.pdf).

Architecture, BAR

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (p. 884).

Minimum Overall Grade Point Average: 2.00
Total Hours: 154

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
English Composition		
See Academic Regulation 3.5 (p. 885)		
ENGL 1113	Composition I [1]	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (A) [1]	4
Humanities (H)		
ARCH 2003	Architecture and Society (HI) [1]	3
or ARCH 2283	History and Theory of Architecture II (H)	
Select 3 hours ARCH history designated (H):		3
ARCH 3083	History and Theory of Renaissance and Baroque Architecture (H)	
ARCH 4173	History and Theory of Skyscraper Design (H)	
ARCH 4293	The Ethics of the Built Environment (H)	
Any other ARCH (H)		
ART 3603	History of Classical Art (H)	
ART 3623	History of Italian Renaissance Art (H)	
ART 3633	History of Baroque Art (H)	
ART 3663	History of American Art (DH)	
ART 3683	History of 20th Century Art (HI)	
Natural Sciences (N)		
Must include one Laboratory Science (L) course		4
PHYS 1114	College Physics I (LN) [1]	
or PHYS 2014	University Physics I (LN)	
Select 3 hours designated (N)		3
Social & Behavioral Sciences (S)		
Courses designated (S)		
Select 3 hours		3
Additional General Education		
Three Hours additional hours of (A), (H), (N), (S)		3
Six Additional Hours of Upper Level Courses Designated (A), (H), (N), or (S)		6
Hours Subtotal		**41**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
At least one Diversity (D) course		
At least one International Dimension (I) course		
College/Departmental Requirements		
Architecture		
ARCH 1112	Introduction to Architecture [1]	2
ARCH 1216	Architectural Design Studio I [1]	6
ARCH 2116	Architectural Design Studio II [1]	6
ARCH 2216	Architectural Design Studio III [1]	6
ARCH 2263	Building Systems [1]	3
ARCH 2252	Design Communication I: Visual and Graphic Acuity [1]	2
ARCH 2183	History and Theory of Architecture I	3
ENSC 2113	Statics [1]	3
Hours Subtotal		**31**
Major Requirements		
Architecture		
ARCH 3116	Architectural Design Studio IV	6
ARCH 3216	Architectural Design Studio V	6
ARCH 3163	Architecture Science 1: Thermal Systems and Life Safety for Architects	3
ARCH 3262	Design Communication II: Advanced Digital Applications	2
ARCH 3323	Structures: Steel I	3
ARCH 3433	Architectural Science II: Acoustics, Lighting, and Service Systems	3
ARCH 4203	Experimental Design Lab	3
ARCH 4093	Architectural Project Management	3
ARCH 4116	Design Studio VI	6
ARCH 4123	Structures: Concrete I	3
ARCH 4216	Architectural Design Studio VII	6
ARCH 4263	Architecture Seminar	3
ARCH 4374	International Field Study (HI)	4
ARCH 4991	Professional Development for Architects and Architectural Engineers	1
ARCH 5216	Architectural Design Studio VIII	6
ARCH 5193	Management of Architectural Practice	3
Architecture Electives		
Select 12 hours from:		12
ARCH 3100	Special Topics in Architecture	
ARCH 3083	History and Theory of Renaissance and Baroque Architecture (H)	
ARCH 3143	Structures: Analysis I	
ARCH 3173	History and Theory of American Architecture	
ARCH 3273	History and Theory of Medieval Architecture	
ARCH 3353	Advanced Graphics and Theory of Representation	

ARCH 3373	Design and Diversity in Urban Centers of the US	
ARCH 4100	Special Topics in Architecture	
ARCH 4073	History and Theory of Early Modern Architecture	
ARCH 4143	Structures: Foundations for Buildings	
ARCH 4173	History and Theory of Skyscraper Design (H)	
ARCH 4183	History and Theory of Architecture: Cities	
ARCH 4233	Sustainable Design in Architecture	
ARCH 4273	History and Theory of Islamic Architecture	
ARCH 4293	The Ethics of the Built Environment (H)	
ARCH 4353	Computational Foundations	
ARCH 4383	History and Theory of Modern Architecture in Italy	
ARCH 5023	Masonry Design and Analysis	
ARCH 5093	Real Estate Development	
ARCH 5493	Entrepreneurship and Architecture	
Hours Subtotal		**73**
Electives		**9**
Additional ARCH Courses		
SPCH 2713	Introduction to Speech Communication (S)	
MUSI 2610	University Bands I	
MUSI 2620	Symphony Orchestra I	
MUSI 2630	University Choral Ensembles I	
ART 2113	Life Drawing	
ART 2223	Oil Painting I	
ART 2233	Watercolor I	
ART 2243	Jewelry and Metals I	
ART 2253	Ceramics I	
ART 2263	Sculpture I	
ART 2273	Printmaking I	
ART 2283	Studio Art Digital Survey	
ART 2403	Illustration I	
ART 2413	Typography I	
ART 2423	Graphic Design I	
ART 3223	Oil Painting II	
ART 3233	Watercolor II	
ART 3243	Jewelry And Metals II	
ART 3253	Ceramics II	
ART 3263	Sculpture II	
ART 3273	Printmaking II	
ART 3403	Illustration II	
ART 3413	Typography II	
ART 3423	Graphic Design II	
MATH 2153	Calculus II (A)	
MATH 2163	Calculus III	
ENSC 2143	Strength of Materials	
PHYS 1214	College Physics II (LN)	
PHYS 2114	University Physics II (LN)	
Lower division CHIN, LATN, FREN, GRMN, SPAN, JAPN		
Upper division AMST, ANTH, ART, CET, CMT, DHM, ECON, EEE, ENGR, ENGL, GEOG, GWST, HIST, HTM, LA, LSB, MC, MKTG, MGMT, PHIL, POLS, REL, SC, SOC and any other upper division course that is approved by the departmental advisor.		
Hours Subtotal		**9**
Total Hours		154

[1] Courses that must be completed prior to admission to professional school with a grade of C or better.

Admission to Professional School (required)

- Refer to the OSU Catalog corresponding to your matriculation date for detailed admissions requirements.

Graduation Requirements

- A minimum 2.00 Technical GPA. The Technical GPA is calculated from all required courses in the curriculum with a prefix belonging to the degree program, or substitution for these courses.
- A final grade of 'C' or better in all ARCH prefix courses and ARCH course substitutes which are prerequisites to other ARCH courses. A final grade of 'C' or better in all non-ARCH prefix courses that are a prerequisite to an ARCH prefix course and ARCH substitutes.
- The capstone course for Architecture majors is ARCH 5216 Architectural Design Studio VIII.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2026.