

# College of Engineering

## Mission and Objectives

Ever since people first began to use tools and manipulate their surroundings, engineering has been a vital aspect of human life, and these days, engineering is as important as it ever was. Society turns to engineers to solve a range of social, economic and environmental problems, and an engineering degree can prepare students to work as managers and leaders, in the public or private spheres. Engineering education combines math and science with creativity, innovation and a passion to change the world.

The College of Engineering adds personal, social and economic value to the region, the state, the nation, and the world through engineering education and cutting-edge research in emerging technologies.

Recognizing that the University of Arkansas, Fayetteville, is a land-grant institution with consequent responsibilities in teaching, research, and service, and realizing that these are mutually dependent and necessary responsibilities, the College of Engineering adopts and seeks to fulfill the following statements of purpose.

**Undergraduate Education** — Offer a high-quality and fully accredited course of instruction involving classroom, laboratory, and extracurricular activities that will result in professionals qualified to begin careers in the field of engineering and prepared to assume responsible places of leadership in society.

**Graduate Education and Research** — Offer state-of-the-art coursework and research experiences that result in all graduates being capable of independent analysis and design, and all Ph.D. graduates capable of extending the state-of-the-art in their areas of expertise.

**Continuing Education** — Provide local, regional, national, and international seminars, symposia, short courses, and credit courses to engineers and others in the technical community to help them further their formal education and keep abreast of new developments in technology.

**Technology Development and Job Creation** — Assist actively and vigorously in the growth and development of the state of Arkansas and the nation by performing research and developing innovative new technology, by updating the existing technology within industrial circles, by providing educational support services, and by attracting and creating new industry.

The College of Engineering focuses on research, teaching and outreach in the following areas:

- Health care and healthcare systems
- Cyber and Homeland Security
- Big Data and Data Analytics
- Sustainability and the built environment
- Electric power systems and advanced power electronics
- Electronics manufacturing
- Environmental and ecosystems analysis
- Mixed signal electric systems
- Materials and manufacturing
- Nanotechnologies
- Transportation, logistics and infrastructure

More information about the College of Engineering can be found at the College of Engineering website (<http://www.engr.uark.edu/>).

## College of Engineering Strategic Plan “Preparing You for Your Tomorrow”

For more than 100 years, the College of Engineering has successfully fulfilled its primary mission: to provide an excellent engineering education to undergraduate and graduate students at the University of Arkansas.

The College of Engineering faculty, staff, alumni and students decided to accept the challenge to become one of the best. Specifically, the college's collective goal is:

*To become and be recognized as one of the top tier graduate and undergraduate engineering programs in the U.S.*

The College's strategic plan encompasses seven main goals. By successfully accomplishing these objectives, the College of Engineering will contribute to the University of Arkansas becoming a nationally competitive, student-centered research institution serving Arkansas and the world, effectively fulfilling its purpose.

## Strategic Goals

1. Provide a student-centered educational experience that attracts diverse, high-quality students, helps them to realize their potential, inspires them to pursue excellence at all degree levels and grooms them to become leaders in their profession.
2. Create a supportive research environment that enhances and recognizes scholarship while stimulating entrepreneurship and economic development within Arkansas, the nation and world.
3. Recruit, mentor and retain high-quality and diverse faculty members who value and promote world-class scholarship.
4. Attract, develop and retain well-qualified, diverse and skilled staff members who are equipped to support the growth and potential of the College of Engineering.
5. Implement service and outreach to enhance the impact of the College of Engineering both within and outside the university through service and outreach.
6. Become a catalyst for economic development to achieve the long-term economic goals of Arkansas through entrepreneurship, research and collaboration with industry and government.
7. Cultivate corporate and alumni relationships to improve educational opportunities and assist in providing a high quality educational infrastructure.

## College Admission Requirements Undergraduate Students

Freshmen admitted to the University of Arkansas, Fayetteville, are eligible to enroll in the College of Engineering. The freshman curriculum stresses a basic foundation in mathematics, physics, and chemistry, which will be required in later years. The sophomore, junior, and senior years are spent in a strong concentration on the student's chosen field, with emphasis on industrial applications of classroom and laboratory work. By the selection of electives, a student can concentrate in depth in a particular subject, have the flexibility to study several subjects, and minor in an area of interest. Provisions are made for electives in the humanities and social sciences as a means of providing a well-rounded education.

## International Students

Before being admitted all computer engineering applicants must submit a Test of Spoken English (TSE) score of at least 5.0, or a 7.0 on the spoken section of the IELTS, and an ACT score of 25 (or SAT score of 1140(R)) or above, to be eligible for admission.

## Transfer Students

In addition to the university policies controlling the granting of credit for course work taken at other institutions, the College of Engineering specifies that advanced (3000- and 4000-level at the University of Arkansas) engineering courses may not normally be transferred from institutions that do not have engineering programs accredited by the Engineering Accreditation Commission or the Computing Accreditation Commission of ABET.

## Laptop Requirement

The College of Engineering requires that entering first-year students have a laptop computer and strongly recommends that entering students obtain a computer that meets or exceeds the college's requirements.

The most up-to-date engineering specifications for laptops can be found on the Computer Recommendation page (<https://its.uark.edu/software-equipment/tech-store/student-recommendations.php#college-of-engineering>). The minimum requirements for the entering fall class are updated annually in the spring. The College of Engineering recommends that you wait until the summer to purchase a new computer to get the most up-to-date system.

An adjustment to your financial aid for the purchase of a computer may be available by completing a Budget Adjustment Form ([https://finaid.uark.edu/office\\_information/forms.php](https://finaid.uark.edu/office_information/forms.php)) through the University Financial Aid Office ([https://finaid.uark.edu/financial\\_aid\\_information/](https://finaid.uark.edu/financial_aid_information/)).

## College Scholarships

The College of Engineering awards numerous scholarships, and most are based primarily on academic performance. However, scholarships may also be awarded on the basis of financial need and diversity. Scholarships are available from both the college and its individual departments. College scholarships are available to any engineering student, and departmental scholarships are meant for students enrolled in a particular discipline of engineering. College and departmental scholarships are not available for entering freshmen. Students must be admitted to the University of Arkansas and enrolled in the College of Engineering to qualify and receive either a college or departmental scholarship. The college has a one-step application process that allows a student to be considered for all college-level and departmental scholarships.

For more information concerning scholarship and diversity opportunities, contact the Engineering Student Affairs Office at 575-3051 or e-mail [engrdean@uark.edu](mailto:engrdean@uark.edu).

## Facilities and Resources

### Instructional, Computer, and Laboratory Facilities

Undergraduate instruction in engineering takes place in Bell Engineering Center, John H. White Jr. Engineering Hall, J.B. Hunt Center for Academic Excellence, and the Mechanical Engineering building. These facilities contain state-of-the-art classrooms and instructional equipment. Undergraduate laboratories are located both on the main campus as well as at the Engineering Research Center. Laboratories offer students

hands-on experience relating to the subject matter addressed in the classroom.

The College of Engineering utilizes a wide variety of computing equipment to assist in engineering education. Students have easy access to computers through general computer laboratories or computer facilities located in specialized laboratories within the college. The computers are networked so that all the computing power of the university, including the mainframe computers, can be accessed from the PCs or workstations provided for engineering students. Owning a personal computer is not required; however, it is beneficial.

## Laboratory Fee

In order to maintain the college's state-of-the-art instructional and computer laboratories, each student enrolled in an engineering course is assessed a laboratory fee for that term. This fee is used only to purchase and maintain equipment and staff the engineering laboratories and classrooms to assist students.

## Library

The books and references used by engineering students and faculty are housed principally in the University of Arkansas Mullins Library. This collection is the most useful and comprehensive engineering library in the state. Many publications pertinent to the engineering profession are being added continuously. Mullins Library is the depository for water resources papers, geological survey materials, and NASA publications, as well as other governmental and industrial series.

## Engineering Research Center

The 178,000-square-foot Engineering Research Center is located approximately two miles south of the main campus. The center provides the facilities and support services for a wide variety of research activities. It houses the Engineering Experiment Station through which the research of individual departments in the college is administered. Centers and laboratories located at the Engineering Research Center include GENESIS, the High Density Electronics Center, the Center for Training Transportation Professionals, and the Chemical Hazards Research Center.

## Distance Learning

A Master of Science in Engineering (M.S.E.) degree is available for students who wish to take a broad range of engineering courses. See the Graduate School Catalog for details.

Professional development and continuing education credits can be earned through the College of Engineering's Center for Distance Learning. These courses provide ongoing training on technical and engineering topics for professional engineers, land surveyors, and others in the technical and engineering professions.

The Master of Science in Operations Management (M.S.O.M.) degree program at the University of Arkansas offers students the philosophy, concepts, and techniques needed to manage available resources to achieve maximum efficiency and effectiveness in meeting operational goals. It provides the tools needed for successful management in industrial and/or military settings. Geared toward the working student, classes meet in the evenings in five 8-week terms per year. The program is offered at military installations at Little Rock Air Force Base (Jacksonville, Ark.), Naval Support Activity Mid-South (Millington, Tenn.), Hurlburt Field, Fla., and at in-state sites at Fayetteville, Bentonville, Camden, and Blytheville. Students in remote locations may also earn the MSOM degree by taking video courses. This is a non-engineering degree

that is open to students from all undergraduate backgrounds. See the Graduate School catalog for details.

## Cooperative Education

### GNEG 38001 Parallel Cooperative Education (1 Hour)

Part-time supervised experience in industry where students apply classroom skills to problems specific to their discipline in a professional workplace setting. Credit may not be applicable to all degree programs in engineering. Offered Fall, Spring, and Summer. Prerequisites: must have completed 30 hours towards engineering degree requirements; must have a minimum 2.50 cumulative GPA; must be working part-time (fewer than 25 hours) at co-op; transfer students (transferring 24 or more hours) must have completed 12 credit hours in the College of Engineering; U.S. citizens must be enrolled at least half-time (6 hours; spring and fall terms only); International F-1 visa students must have completed at least 30 weeks of study in the USA and must be enrolled full-time (12 hours; spring and fall terms only, per immigration regulations). These requirements are accurate for international students as of February 2021 and are subject to change based on immigration requirement changes within the law; for the most up-to-date requirements, please visit the Cooperative Education Overview page (<https://engineering.uark.edu/career-services/students/cooperative-education-overview.php>).

### GNEG 38101 Alternating Cooperative Education (1 Hour)

Full-time supervised experience in industry where students apply classroom skills to problems specific to their discipline in a professional workplace setting. Application of credit to a degree program is at the discretion of the department owning the degree program. Offered Fall, Spring, and Summer. Prerequisites: must have completed 30 hours toward engineering degree requirements; must have a minimum of 2.50 cumulative GPA; must have at least 12 hours of required coursework in their major remaining upon return to campus; must be working full-time (40-plus hours); must not be enrolled in more than 3 credit hours; transfer students (transferring 24 or more hours) must have completed 12 credit hours in the College of Engineering; International F-1 visa must have completed at least 30 weeks of study in the USA and students may only enroll during summer per immigration and College of Engineering regulations. These requirements are accurate for international students as of February 2021 and are subject to change based on immigration requirement changes within the law; for the most up-to-date requirements, please visit Cooperative Education Overview page (<https://engineering.uark.edu/career-services/students/cooperative-education-overview.php>).

### GNEG 58001 Parallel Cooperative Education (1 Hour)

Part-time supervised experience in industry where students apply focused, discipline specific, classroom and research skills to problems directly related to their area of study in a professional workplace setting. A combination of GNEG 58001 or GNEG 58101 may be repeated for up to 3 hours of non-degree credit. Offered Fall, Spring, and Summer. Prerequisites: must have completed at least 6 hours of graduate level engineering courses meeting degree requirements at the University of Arkansas; must have a minimum of 3.0 cumulative GPA; must be working part-time (fewer than 25 hours) at co-op; must have approval of graduate committee chair prior to interviewing for co-op; must not hold a TA, GA, or RA position during the work experience; must have at least 3 required hours (Master's students) or 6 required hours (Ph.D. students) of course work remaining upon return to campus; U.S. Citizens must be enrolled at least half-time (5 hours, spring and fall terms only); International F-1 visa students must have completed 30 weeks of study

in the USA and must be enrolled full-time (9 hours; spring and fall terms only, per immigration regulations); M.S.O.M. students must have completed OMGT 50003 Introduction to Operations Management (with a grade of B or better) and one OMGT graduate elective directly applicable to the proposed internship experience. These requirements are accurate for international students as of February 2021 and are subject to change based on immigration requirement changes within the law; for the most up-to-date requirements, please visit Cooperative Education Overview page (<https://engineering.uark.edu/career-services/students/cooperative-education-overview.php>).

### GNEG 58101 Alternating Cooperative Education (1 Hour)

Full-time supervised experience in industry where students apply focused, discipline specific, classroom and research skills to problems directly related to their area of study in a professional workplace setting. A combination of GNEG 58001 or GNEG 58101 may be repeated for up to 3 hours of non-degree credit. Offered Fall, Spring, and Summer. Prerequisites: must have completed at least 6 hours of graduate level engineering courses meeting degree requirements at the University of Arkansas; must have a minimum 3.0 cumulative GPA; must be working full-time (40+ hours) at co-op; must have approval of graduate committee chair prior to interviewing for co-op; must not hold a TA, GA, or RA position during the work experience; must have at least 3 required hours (Master's students) or 6 required hours (Ph.D. students) of course work remaining upon return to campus; must not be enrolled in more than 3 credit hours; International F-1 visa students must have completed at least 30 weeks of study in the USA and may only enroll during summer per immigration and College of Engineering regulations; M.S.O.M. students must have completed OMGT 50003 Introduction to Operations Management (with a grade of B or better) and one OMGT graduate elective directly applicable to the proposed internship experience. These requirements are accurate for international students as of February 2021 and are subject to change based on immigration requirement changes within the law; for the most up-to-date requirements, please visit Cooperative Education Overview page (<https://engineering.uark.edu/career-services/students/cooperative-education-overview.php>).

## Student Organizations

The following are honor societies, social organizations and professional societies to which engineering students at the University of Arkansas may aspire:

- Alpha Chi Sigma (a professional chemistry fraternity)
- Alpha Epsilon (Biological/Agricultural Engineering)
- Alpha Pi Mu (Industrial Engineering)
- Chi Epsilon (Civil Engineering)
- Eta Kappa Nu (Electrical Engineering)
- Omega Chi Epsilon (Chemical Engineering)
- Order of the Engineer (professional engineering society)
- Phi Eta Sigma (freshmen)
- Phi Kappa Phi (juniors and seniors)
- Phi Sigma Rho, (professional engineering sorority)
- Pi Mu Epsilon (Mathematics)
- Pi Tau Sigma (Mechanical Engineering)
- Tau Beta Pi (Engineering)
- Theta Tau, (A professional engineering fraternity, it maintains a chapter house on the campus and is active in university and college affairs.)

Several national engineering societies are listed below that maintain student branches in the College of Engineering, each under the auspices of a professor in a related department.

- American Chemical Society
- American Concrete Institute
- American Ecological Engineering Society
- American Indian Science and Engineering Society
- American Institute of Aeronautics and Astronautics
- American Institute of Chemical Engineers
- American Nuclear Society
- Amateur Radio Club of the University of Arkansas
- American Society of Agricultural and Biological Engineers
- American Society of Civil Engineers
- American Society of Heating, Refrigeration, and Air-Conditioning
- American Society of Mechanical Engineers
- Association for Computing Machinery
- Biomedical Engineering Society
- Engineers Without Borders
- Institute of Biological Engineering
- Institute of Electrical and Electronics Engineers
- Institute of Electrical and Electronics Engineers, Components, Packaging, and Manufacturing Technology Society
- Institute of Electrical and Electronics Engineers, Power Electronics Society
- Institute of Industrial Engineers
- Institute of Transportation Engineers
- International Microelectronics and Packaging Society
- Materials Research Society
- National Society of Professional Engineers
- National Society of Black Engineers
- Society of Automotive Engineers Assoc. for Computing Machinery
- Society of Hispanic Professional Engineers
- Society of Manufacturing Engineers
- Society of Women Engineers
- Transportation and Logistics Association

## College Academic Regulations

Students are expected to keep themselves informed concerning current regulations, policies, and program requirements in their fields of study and must meet all requirements of the degree programs in which they are enrolled. Courses that are modified or added to a curriculum and that are incorporated into the curriculum at a level beyond that at which a student is enrolled may become graduation requirements for that student. Courses that are incorporated into the curriculum at a level lower than the one at which the student is enrolled are not required for that student.

## Eligibility

Only students enrolled in the College of Engineering or enrolled in programs in which curricula require engineering courses will be allowed to take engineering courses. Exceptions to this requirement must be approved by the dean of engineering. This does not apply to graduate students.

## Code of Ethics

Students in the College of Engineering are obligated to comply with pertinent provisions of the Code of Ethics applicable to professional practice following graduation. The Code requires “honesty, impartiality, fairness, and equity,” and “adherence to the highest principles of ethical conduct.” Most particularly, it states that engineers shall:

1. Be objective and truthful in professional reports, statements, or testimony;
2. Not falsify or permit misrepresentation of their academic or professional qualifications;
3. Give credit for engineering work to those whom credit is due;
4. Not compete unfairly with other engineers by attempting to obtain employment or advancement by improper or questionable methods;
5. Avoid any act tending to promote their own interest at the expense of the dignity and integrity of the profession.

## Degree Requirements

The basic requirement for a Bachelor of Science degree in engineering is 124-128 semester hours of academic work, depending on the career field chosen. Students coming from high school with adequate preparation will be able to satisfy this requirement in eight semesters; however, some students require preparatory courses, and others choose to enroll in slightly lighter loads and graduate in nine or ten semesters. Students enrolled in ROTC require an additional 19 semester hours to meet all graduation requirements and graduate in ten semesters (five years).

Engineering is a rapidly changing profession, and the departmental curricula are updated continuously to keep pace with these changes. Students entering under this catalog will be required to comply with such curriculum changes to earn their degree. However, the total number of semester hours required for the degree may not be increased, and all work completed in accordance with this catalog prior to the curriculum change will be applied toward the student's degree requirements. Former students of the college must meet the curriculum requirements in effect at the time of their readmission.

## Graduation Requirements

In addition to university requirements for enrollment and graduation, the College of Engineering has these additional requirements. Individual departments may have additional requirements.

1. **Grade-Point Average** – A candidate for a degree from the College of Engineering must have earned a grade-point average of no less than 2.00 on all courses in the student's major area of study.
2. **Courses That Do Not Count Toward a Degree** – The following courses, which may be required, do not count toward degree credit for bachelor degrees in the College of Engineering: MATH 11003, MATH 12003, and MATH 13004 or their equivalents.
3. **“D” Rule** – No student will be allowed to graduate if the student has “D” grades in more than 8 hours presented to meet the requirements for a degree.
4. **Transfer of Courses** – Advanced (3000- and 4000-level at the University of Arkansas) engineering courses may not normally be transferred from institutions that do not have programs accredited by the Engineering Accreditation Commission.
5. **Resident Requirements** – A candidate must earn a minimum of 20 credit hours at the 3000 level and above in the College of Engineering from the University of Arkansas.



6. **State Minimum Core** – The University of Arkansas has adopted the state's minimum requirements of 35 semester-credit-hours of general education courses that are required of all baccalaureate degree candidates. This is in compliance with Arkansas Act 98 of 1989 and the subsequent action of the Arkansas State Board of Higher Education. Beginning in the fall semester of 1991, all state institutions of higher education in Arkansas have a 35-hour minimum core requirement with specified hours in each of six academic areas. The university and the College of Engineering have identified those courses that meet the minimum requirement, and they are listed in the chart below.

#### Specific State Minimum Core Requirements for Engineering Students

<b>English</b>		
ENGL 10103	Composition I (ACTS Equivalency = ENGL 1013)	3
ENGL 10303	Technical Composition II (ACTS Equivalency = ENGL 1023)	3
<b>Mathematics</b>		
MATH 24004	Calculus I (ACTS Equivalency = MATH 2405)	4
<b>Science</b>		
PHYS 20304	University Physics I (ACTS Equivalency = PHYS 2034)	4
Select one of the following:		4
PHYS 20404	University Physics II (ACTS Equivalency = PHYS 2044 Lecture)	
CHEM 14203	University Chemistry II (ACTS Equivalency = & CHEM 14201CHEM 1424 Lecture)	
	and University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)	
BIOL 10103	Principles of Biology (ACTS Equivalency = BIOL & BIOL 10101 1014 Lecture)	
	and Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab)	
<b>U.S. History or Government</b>		
Select one of the following:		3
HIST 20003	History of the American People to 1877 (ACTS Equivalency = HIST 2113)	
HIST 20103	History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123)	
PLSC 20003	American National Government (ACTS Equivalency = PLSC 2003)	
<b>Fine Arts, Humanities and Social Sciences</b>		
Fine Arts *		3
Humanities *		3
Social Sciences *		9
<b>Total Hours</b>		<b>36</b>

\* Must be selected from the university-approved list of lower level Humanities, Fine Arts and Social Science courses found in the main State Minimum Core (<http://catalog.uark.edu/undergraduatecatalog/gened/stateminimum/>) list.

## Minors in Other Colleges and Schools

Students in the College of Engineering may pursue an academic minor in other colleges. For example, a minor in business is popular among engineering students. For requirements regarding minors, check the

catalog listing for the department offering the minor. Students must notify the College of Engineering dean's office of their intent to pursue a minor.

## Requirements to Graduate with Honors

Students who have demonstrated exceptional academic performance in baccalaureate degree programs will be recognized at graduation by the honors designation of *cum laude*, *magna cum laude*, or *summa cum laude*. To earn this designation, the student must meet the following criteria:

1. Must have completed at least one-half of his or her degree work at the University of Arkansas;
2. Must have at least a 3.50 GPA on University of Arkansas course work, computed at graduation (students with grade-point averages lower than 3.50 do not receive honors designation at graduation);
3. Must successfully complete the Engineering Honors Program, which includes a minimum of 12 hours of honors courses (at least 6 of these hours in engineering), an undergraduate research experience and thesis, and any additional departmental requirements;
4. Research and thesis material shall be evaluated by each department;
5. For *cum laude*, the student must achieve a GPA of 3.50 or higher and have good or better performance on the undergraduate research and thesis;
6. For *magna cum laude*, the student must achieve a GPA of 3.75 or higher and have good or better performance on the undergraduate research and thesis;
7. For *summa cum laude*, the student must achieve a GPA of 3.90 or higher and have outstanding performance on the undergraduate research and thesis.

The criteria may be evaluated and changed periodically by the College of Engineering.

## Requirements to Graduate with Distinction

Students who have not completed the Engineering Honors Program but have demonstrated excellent academic performance in baccalaureate degree programs will be recognized at graduation by the designation of "with distinction," "with high distinction," or "with highest distinction." To earn these designations, the student must meet the following criteria on his or her University of Arkansas course work:

1. Must have completed at least one-half of his or her degree work at the University of Arkansas;
2. For "with distinction," the student must achieve a GPA of 3.60 or higher;
3. For "with high distinction," the student must achieve a GPA of 3.75 or higher;
4. For "with highest distinction," the student must achieve a GPA of 3.90 or higher.

The criteria may be evaluated and changed periodically by the College of Engineering.

## Graduate Studies

The College of Engineering, in cooperation with the UA Graduate School, offers programs leading to the following graduate degrees:

- Master of Science in Biological Engineering (M.S.B.E.)
- Master of Science in Biomedical Engineering (M.S.Bm.E.)
- Master of Science in Chemical Engineering (M.S.Ch.E.)

- Master of Science in Civil Engineering (M.S.C.E.)
- Master of Science in Computer Engineering (M.S.Cmp.E.)
- Master of Science in Computer Science (M.S.)
- Master of Science in Electrical Engineering (M.S.E.E.)
- Master of Science in Engineering (M.S.E.)
- Master of Science in Environmental Engineering (M.S.En.E.)
- Master of Science in Industrial Engineering (M.S.I.E.)
- Master of Science in Mechanical Engineering (M.S.M.E.)
- Master of Science in Operations Management (M.S.O.M.)
- Doctor of Philosophy in Computer Science (Ph.D.)
- Doctor of Philosophy in Engineering (Ph.D.)

In addition, the College of Engineering supports the following interdisciplinary graduate programs:

- Master of Science in Cellular and Molecular Biology (M.S.)
- Master of Science in Microelectronics-Photonics (M.S.)
- Master of Science in Space and Planetary Sciences (M.S.)
- Doctor of Philosophy in Cellular and Molecular Biology (Ph.D.)
- Doctor of Philosophy in Microelectronics-Photonics (Ph.D.)
- Doctor of Philosophy in Space and Planetary Sciences (Ph.D.)

Further information concerning these programs may be found in the Graduate School Catalog or in the office of the dean of the Graduate School.

## Accreditations

As the only comprehensive engineering program in Arkansas, the College of Engineering offers undergraduate, graduate, and doctoral degrees through eight academic departments.

The College of Engineering offers the following programs accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org) (<http://www.abet.org>).

- Bachelor of Science in Biological Engineering (B.S.B.E.)
- Bachelor of Science in Biomedical Engineering (B.S.Bm.E.)
- Bachelor of Science in Chemical Engineering (B.S.Ch.E.)
- Bachelor of Science in Civil Engineering (B.S.C.E.)
- Bachelor of Science in Computer Engineering (B.S.Cmp.E.)
- Bachelor of Science in Electrical Engineering (B.S.E.E.)
- Bachelor of Science in Industrial Engineering (B.S.I.E.)
- Bachelor of Science in Mechanical Engineering (B.S.M.E.)

The College Engineering offers the following program accredited by the Computing Accreditation Commission of ABET, [www.abet.org](http://www.abet.org) (<http://www.abet.org>).

- Bachelor of Science in Computer Science (B.S.)

## Office of the Dean of the College

4183 Bell Engineering Center, 479-575-6012

**Dean**  
Kim Needy

**Associate Dean**  
Kevin Hall

**Associate Dean for Research**

Heather Nachtmann

**Associate Dean for Student Success**  
Bryan Hill

**Assistant Dean for Finance**  
Larry Esch

**Assistant Dean for Student Affairs**  
Thomas Carter, III

## Academic Programs Office

3189 Bell Engineering, 479-575-3052

**Website:** [engineering.uark.edu](http://engineering.uark.edu) (<http://engineering.uark.edu>)

**Email:** [engrinfo@uark.edu](mailto:engrinfo@uark.edu)

## Degrees Offered

The College of Engineering offers programs leading to the following eight undergraduate degrees:

- Bachelor of Science in Biological Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/biologicalandagriculturalengineeringbaeg/>) (B.S.B.E.)
- Bachelor of Science in Biomedical Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/biomedicalengineeringbmeg/>) (B.S.Bm.E.)
- Bachelor of Science in Chemical Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/chemicalengineering/>) (B.S.Ch.E.)
- Bachelor of Science in Civil Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/civilengineeringcveg/>) (B.S.C.E.)
- Bachelor of Science in Computer Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/computerscienceandcomputerengineeringcsce/>) (B.S.Cmp.E.)
- Bachelor of Science in Computer Science (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/computerscienceandcomputerengineeringcsce/>) (B.S.)
- Bachelor of Arts in Computer Science (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/computerscienceandcomputerengineeringcsce/>) (B.A.)
- Bachelor of Science in Data Science (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/interdisciplinarystudies/>) (B.S.) (interdisciplinary program)
- Bachelor of Science in Electrical Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/electricalengineeringeleg/>) (B.S.E.E.)
- Bachelor of Science in Industrial Engineering and Operations Analytics (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/industrialengineeringoperationsanalytics/>) (B.S.I.E.O.A.)
- Bachelor of Science in Mechanical Engineering (<http://catalog.uark.edu/undergraduatedcatalog/collegesandschools/collegeofengineering/mechanicalengineeringmeeg/>) (B.S.M.E.)

## Minor

- Engineering Management (<http://catalog.uark.edu/undergradcatalog/collegesandschools/collegeofengineering/industrialengineeringineg/#minorinengineeringmanagementtext>)

## Other Programs

### Off-Campus Programs

The College of Engineering at the University of Arkansas (UofA) is offering the Bachelor of Science degrees in Electrical Engineering and Mechanical Engineering at the University of Arkansas at Fort Smith (UAFS). Upper-division courses are taught in person or through distance-learning technology by UAF faculty, and lower-division courses are taught by UAFS faculty. The degree is awarded by University of Arkansas (UofA), but all classes are offered at the UAFS campus.

### Cooperative Education

Kelsey Lavigne

Career Development Center, College of Engineering, Bell 3158  
(479) 575-6201, Fax: (479) 575-7744, [klavigne@uark.edu](mailto:klavigne@uark.edu)

Cooperative education (co-op) is an academic program that allows students to gain practical work experience prior to graduation. Over the years thousands of engineering students have participated in the co-op program at the University of Arkansas, gaining experience related to their major locally, within the state, across the nation, and internationally. Students work either full- or part-time in paid, degree-related jobs, and the skills they acquire allow them to step into their first full-time positions ready to contribute in ways that other students cannot. The material below will give more information about the co-op program.

### Forms of Cooperative Education: Alternating and Parallel

In an alternating plan, students alternate between semesters of on-campus study and semesters off-campus at their co-op work site. Students can take a maximum of 3 credit hours of course work during the off-campus co-op periods. In a parallel co-op, students work part-time for a local company (less than 25 hours each week) and attend school at least half-time (6 credit hours). In either plan the student is considered a full-time student.

By participating in Cooperative Education, students have the chance to:

- Gain hands-on experience in a real world setting
- Confirm the choice of their major
- Make valuable industry contacts
- Enhance their communication skills
- Make money while also taking classes
- Lay the foundations for a future full-time job

### Requirements and Conditions

- GNEG 38001 (undergraduate students working part-time):
  - Must have completed 30 hours towards engineering degree.
  - Must have a minimum of 2.25 cumulative GPA.
  - Must be enrolled at least half-time and must be working part-time at co-op.
- GNEG 38101 (undergraduate students working full-time):
  - Must have completed 30 hours toward engineering degree.
  - Must have a minimum of a 2.25 cumulative GPA.

- Must be working full-time and must not be enrolled in more than 3 credit hours.
- Must have at least 12 hours of coursework in their major remaining upon return to campus.
- GNEG 58001 (graduate students working part-time):
  - Completed at least 6 hours towards engineering degree.
  - Have a minimum of a 3.0 cumulative GPA.
  - Must be enrolled at least half-time and must be working part-time at co-op.
  - Must have approval of their thesis/dissertation advisor prior to interviewing for co-op positions.
- GNEG 58101 (graduate students working full-time):
  - Completed at least 6 hours towards engineering degree.
  - Have a minimum of a 3.0 cumulative GPA.
  - Must be working full-time and must not be enrolled in more than 3 credit hours.
  - Must have at least 3 hours of non-thesis, -dissertation, or -research hours remaining upon return to campus.
  - Must have approval of their thesis/dissertation advisor prior to interviewing for co-op positions.
  - Students who are TA's, GA's, or RA's *in the term of their work experience* are not eligible for this course.
- Transfer Students
  - Must have completed one semester of full-time study in the College of Engineering.
  - Must meet all other co-op requirements.
- F-1 Students
  - Must have completed nine months of study in the United States.
  - Must meet all other co-op requirements.

Full-time co-op assignments consist of the following scenarios:

- One semester away from campus (Spring, Summer, or Fall).
- One summer and one semester away from campus (Spring & Summer OR Summer & Fall).
- Alternating Semesters between Spring, Summer, and Fall.

Students who are away from campus for 2 semesters in one year, are eligible for only one semester away the following year with no more than three co-op semesters in a 24-month period. (Exceptions to this must be approved in advance by their departmental co-op representative.) Students who are going to be away from campus for the Fall and Spring semester in the same academic must receive prior approval from their departmental co-op representative.

### Study Abroad Programs

The College of Engineering actively encourages engineering students to obtain an international experience while pursuing an engineering degree. Students have several opportunities to join engineering faculty-led programs in India, Belize and Spain as well as opportunities within the Southeastern Conference Academic Consortium (SECAC). For more information on study abroad opportunities, contact the Assistant Dean for International Programs, 479-575-7236.

### Dual-Degree Transfer Programs

The College of Engineering recognizes that a graduate engineer, to be of full service to community, must be educated in the social sciences and humanities as well as in technical subjects. The practice of industry to elevate engineers to managerial and administrative positions elevates the

desirability of a broad educational background. Likewise, most universities within Arkansas do not offer a degree in engineering. Accordingly, the College of Engineering of the University of Arkansas has entered into a cooperative program with several Arkansas "partner" universities to provide for dual-degree programs that lead to a Bachelor of Science degree from the partner university and an engineering degree from the University of Arkansas. Typically, a student spends two to three years at the partner university and then completes an engineering curriculum in two to three years at the University of Arkansas. The student is awarded the Bachelor of Art/Bachelor of Science degree by the partner university and the Bachelor of Science in an engineering discipline by the University of Arkansas. More information is available at [www.engr.uark.edu/transfer](http://www.engr.uark.edu/transfer) (<http://www.engr.uark.edu/transfer.php>)

## Honors Program

The College of Engineering has established an honors program to challenge superior students with a more in-depth academic program and research experience and to provide a structure for working more closely with faculty members and other students in a team environment. An honors program is highly recommended for individuals planning academic or research related careers that require considerable critical and original independent thinking. Admission requirements for the college's Honors Program are as follows: entering freshmen must have at least a 3.5 high school GPA and at least a 28 composite score on the ACT or SAT equivalent; entering transfer students must have at least a 3.5 GPA on their transfer work. Students not initially qualifying for the Engineering Honors Program are eligible if they earn a 3.500 cumulative GPA at the University of Arkansas.

Students must formally apply for admission to the Honors Program by completing the online application. The application is available at Honors College website (<https://honors-application.uark.edu/>). Once accepted into the program, Honors students take a minimum of 12 hours of Honors courses (a minimum of 6 of these 12 hours must be in engineering), participate in undergraduate research and write an undergraduate thesis, and must fulfill any additional departmental requirements. To receive Latin honors distinction at graduation, a student must hold a cumulative GPA of 3.500 or better (for all course work, computed at graduation).

Deadlines related to the Honors Program are as follows:

1. A Honors Advising Form is to be completed prior to a student earning 100 semester hours.
2. Honors College Graduation Certification is to be completed prior to one week before the last day of classes of the student's last semester.

## First-Year Requirements and Eight-Semester Plan

All freshman enrolling in the College of Engineering may participate in an Eight-Semester Degree Completion Program (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/eightsemesterdegreecompletionpolicy/>).

All students who want to pursue an engineering degree or a Bachelor of Science in Computer Science should follow the plan below for the first two semesters, at the end of which they may finish an eight-semester plan in Computer Science (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/computerscienceandcomputerengineeringcsce/>) (B.S.) or choose from among any of the engineering fields: Biological Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/biologicalandagriculturalengineeringbaeg/>),

Biomedical Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/biomedicalengineeringbmeg/>), Chemical Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/chemicalengineering/>), Civil Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/civilengineeringcveg/>), Computer Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/computerscienceandcomputerengineeringcsce/>), Electrical Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/electricalengineeringeleg/>), Industrial Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/industrialengineeringineg/>), or Mechanical Engineering (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/collegeofengineering/mechanicalengineeringmeeg/>).

### Specific State Minimum Core Requirements for Engineering Students

#### English (6 hours)

ENGL 10103	Composition I (ACTS Equivalency = ENGL 1013)	3
ENGL 10303	Technical Composition II (ACTS Equivalency = ENGL 1023)	3

#### Mathematics (4 hours)

MATH 24004	Calculus I (ACTS Equivalency = MATH 2405)	4
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#### Science (8 hours)

Engineering students are required to take additional science courses with matching labs beyond the minimum 8 hours required by the state minimum core.

CHEM 14103	University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture)	3
PHYS 20304	University Physics I (ACTS Equivalency = PHYS 2034)	4

#### U.S. History or Government (6 hours)

HIST 20003	History of the American People to 1877 (ACTS Equivalency = HIST 2113)	3
HIST 20103	History of the American People, 1877 to Present (ACTS Equivalency = HIST 2123)	3

<b>Fine Arts</b>	<b>3</b>
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<b>Humanities</b>	<b>3</b>
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<b>Social Sciences</b>	<b>9</b>
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## First-Year Semester Plan

First Year	Units	
	Fall	Spring
GNEG 11101 Introduction to Engineering I	1	
MATH 24004 Calculus I (ACTS Equivalency = MATH 2405)	4	
CHEM 14103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture)	3	
U.S. History/Government	3	
ENGL 10103 Composition I (ACTS Equivalency = ENGL 1013)	3	
GNEG 11201 Introduction to Engineering II		1
MATH 25004 Calculus II		4
PHYS 20304 University Physics I (ACTS Equivalency = PHYS 2034)		4



ENGL 10303 Technical Composition II (ACTS Equivalency = ENGL 1023)		3
Freshman Science Elective (See specific major for requirements)		4
Year Total:	14	16
<hr/> <b>Total Units in Sequence:</b>		<b>30</b>