

# Engineering

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## Mission

The mission of the College of Engineering is to advance knowledge through research and education of students in core engineering disciplines. The college promotes ethical, innovative, and multidisciplinary approaches in an environment of collaboration with local and global partners to address society's technological problems.

- **Dean:** Shankar Mahalingam, B.Tech., M.S., Ph.D., Professor of Mechanical Engineering
  - **Associate Dean for Graduate Education and Research:** Michael D. Anderson, Ph.D., Professor of Civil Engineering
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## Departments and Degree Programs

The College of Engineering has five academic departments: Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Systems Engineering and Engineering Management, and Mechanical and Aerospace Engineering. The academic departments offer several graduate degree programs including:

- Master of Science in Engineering (Options in Civil, Chemical, Computer, Electrical, Industrial, and Mechanical)
- Master of Science in Aerospace Systems Engineering
- Master of Science in Operations Research
- Master of Science in Software Engineering
- Doctor of Philosophy (Aerospace Systems, Civil, Computer, Electrical, Industrial, and Mechanical)

The College of Engineering also supports several interdisciplinary graduate degree programs including:

- Master of Science in Cybersecurity
- Master of Science in Material Science
- Doctor of Philosophy in Biotechnology Science and Engineering
- Doctor of Philosophy in Material Science
- Doctor of Philosophy in Optical Science and Engineering

## Engineering Graduate Study

The College of Engineering comprises five academic departments of instruction and research. These units offer programs of study and research leading to master's and doctoral degrees. Some departments also offer programs in one or more subdisciplines as well as joint programs with other UAH colleges/departments or other universities in the University of Alabama system.

The College of Engineering graduate programs are designed to provide a balance of strong academics and graduate level research. Engineering faculty members provide broad and vigorous research programs with excellent opportunities for thesis and dissertation work.

## Admissions

Applicants for graduate study in the College of Engineering must apply for admission to the UAH Graduate Studies. Applicants may initiate the admissions process at <http://register.uah.edu>. More information about the admissions process may be found here (<http://www.uah.edu/admissions/graduate/admission-process>).

Unconditional admission to an Engineering Master's degree program may be granted to applicants who have

1. earned a baccalaureate degree in engineering from institutions with ABET-accredited programs (not required for MS in Operations Research),
2. earned a minimum 3.0/4.0 grade point average for their baccalaureate work
3. earned minimum GRE scores of 145 (Verbal) and 155 (Quantitative) and
4. have met specific program requirements. An engineering department may choose to waive one or more of these requirements with appropriate and documented justification.

International students may be granted unconditional admission if they meet the requirements for unconditional admission described above AND have earned a minimum of 18 on each TOEFL subscore.

For admission to an Engineering Doctoral degree program, additional admissions criteria is specified by each department or program. Students should consult their major engineering department for the additional requirements.

## Graduate Assistantships

Financial aid, in the form of teaching and research assistantships, is available for qualified students. Admission to an Engineering graduate degree program does not guarantee financial aid. Students should consult their major department for information on applying for assistantships.

## Initial Advisement

Applicants who are granted admission to graduate study in the College of Engineering will be referred to the major department for the assignment of a temporary advisor.

## Master's Degree General Requirements

The College of Engineering master's degree programs include a Plan I, thesis option, or a Plan II, non-thesis option. Students who choose the Plan I option must complete and defend a thesis based on research performed under a faculty advisor. Students who choose the Plan II option must complete a capstone experience or a comprehensive exam. Each engineering master's degree program requires a minimum of 30 semester hours. Students should consult with their major department for additional requirements.

A minimum overall grade point average of 3.0/4.0 is required for all graduate courses at UAH, whether or not the course is required to satisfy the master's degree requirements. Further, a minimum overall grade point average of 3.0/4.0 is required for all courses taken at the 600-level or above. With permission of the major department, students may transfer up to 12 semester hours of acceptable graduate credit earned at an approved institution to satisfy master's degree requirements. Transfer coursework may not be older than 10 years at the time of graduation. All requirements for the master's degree must be completed in six years.

## Doctoral Degree General Requirements

The College of Engineering doctoral degree programs require a minimum of 48 hours of graduate level coursework and a minimum of 18 hours of dissertation. All programs will require a qualifying examination, which is administered by the supervisory committee within a year after the student has completed their graduate coursework. All programs also require the completion and defense of a dissertation based on research performed under a faculty advisor. Some programs may also require a preliminary examination or other subject examination as well as a research proposal presentation. For those students who have already earned a Master's degree, a minimum of 18 semester hours of approved coursework beyond the Master's degree, with an average grade no lower than a B.

A minimum overall grade point average of 3.0/4.0 is required for all graduate courses at UAH, whether or not the course is required to satisfy the master's degree requirements. Further, a minimum overall grade point average of 3.0/4.0 is required for all courses taken at the 600-level or above. With permission of the major department, students may transfer acceptable graduate credit earned at an approved institution to satisfy Ph.D. degree requirements. Transfer coursework may not be older than 10 years at the time of graduation. All requirements for the Ph.D. degree must be completed within 5 years after the student has passed the qualifying exam.

Programs leading to the degree of Doctor of Philosophy are offered in the College of Engineering and are granted on the basis of general demonstrated ability to do independent, original investigation. These attributes are tested in a comprehensive examination and in a dissertation that must clearly and effectively present the substantial results of research. These accomplishments, rather than mere accumulation of residence and course credits, are essential considerations in awarding the Ph.D. degree.

## Residency Requirements

A majority of semester hours (including thesis/dissertation hours) must be earned at UAH or in the case of joint/shared program, at the participating institution. Residence may be established through either (1) being enrolled as a full-time student (at least 9 graduate semester hours) either for one continuous academic year, or for Spring and Fall semesters in the same calendar year, or (2) being enrolled in at least 6 hours of graduate course work in at least three of the four consecutive semesters.

All research effort presented for residence credit toward the Ph.D. degree must be performed under the direction of a member of the graduate faculty who holds full membership status.

## Master's Programs in Engineering

- Aerospace Systems Engineering, MSASE (<http://catalog.uah.edu/grad/colleges-departments/engineering/mechanical-aerospace-engineering/aerospace-systems-engineering>)
- Chemical Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/chemical-materials-engineering/chemical-engineering-mse>)
- Civil Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/chemical-materials-engineering/civil-engineering-mse>)
- Computer Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/computer-engineering-mse>)

- Cybersecurity, MS - Computer Engineering Track (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/computer-engineering-mse-information-assurance-concentration>)
- Cybersecurity, MS-CBS Interdisciplinary - Management Track (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/cybersecurity-ms-cbs-interdisciplinary>)
- Cybersecurity, MS Interdisciplinary - Computer Engineering Track (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/cybersecurity-ms-interdisciplinary-computer-engineering-track>)
- Cybersecurity, MS Interdisciplinary - Computer Science Track (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/cybersecurity-ms-interdisciplinary-computer-science-track>)
- Cybersecurity, MS Interdisciplinary - Management Track (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/cybersecurity-ms-interdisciplinary-management-track>)
- Electrical Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/electrical-engineering-mse>)
- Industrial and Systems Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/industrial-systems-engineering-and-engineering-management/industrial-systems-engineering-mse>)
- Industrial and Systems Engineering, MSOR (<http://catalog.uah.edu/grad/colleges-departments/engineering/industrial-systems-engineering-and-engineering-management/industrial-systems-engineering-msor>)
- Material Science, MS (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/material-science-ms>)
- Mechanical Engineering, MSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/mechanical-aerospace-engineering/mechanical-engineering-mse>)
- Software Engineering, MSSE (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/software-engineering-msse-master-of-science>)

## Doctoral Programs in Engineering

- Aerospace Systems Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/engineering/mechanical-aerospace-engineering/asephd>)
- Biotechnology Science and Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/biotechnology-science-engineering-phd>)
- Civil Engineering, PhD (Joint with UAB) (<http://catalog.uah.edu/grad/colleges-departments/engineering/civil-environmental-engineering/civil-engineering-phd-joint-with-uab>)
- Computer Engineering, PhD (Shared with UAB) (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/computer-engineering-phd-shared-with-uab>)
- Electrical Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/engineering/electrical-computer-engineering/electrical-engineering-phd>)
- Industrial and Systems Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/engineering/industrial-systems-engineering-and-engineering-management/industrial-systems-engineering-phd>)
- Material Science, PhD (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/material-science-phd>)
- Mechanical Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/engineering/mechanical-aerospace-engineering/mechanical-engineering-phd>)
- Optical Science and Engineering, PhD (<http://catalog.uah.edu/grad/colleges-departments/interdisciplinary-programs/optical-science-engineering-phd>)