

Interdisciplinary Engineering (PhD)

Degree Offered	Interdisciplinary Engineering PhD
Website	https://www.uab.edu/engineering/home/graduate/interdisciplinary-phd
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Program Objectives

Today's professional must constantly change, adapt, focus, and navigate among disciplines to keep up with rapid market shifts and technological advances. Because of these market trends, industries are particularly interested in interdisciplinary graduate education that emphasize both breadth of knowledge and depth in a particular field. The premise of interdisciplinary programs is that students must be educated in multiple related subject areas to remain competitive and have successful careers in academia or industry. The PhD Program in Interdisciplinary Engineering provides a rigorous academic curriculum including coursework in two or more disciplines and unique opportunities for interdisciplinary research.

The Interdisciplinary Engineering PhD program draws upon strengths of the five departments in the School of Engineering: Biomedical Engineering; Civil, Construction, and Environmental Engineering; Electrical and Computer Engineering; Materials Science and Engineering; and Mechanical Engineering. Students enrolled in the Interdisciplinary Engineering PhD program will gain the skills to succeed as independent and productive investigators in multidisciplinary analysis and design, with applications over a wide spectrum of science, engineering, health, and medical fields.

The program provides unique opportunities for interdisciplinary research and fosters interdisciplinary collaborative interactions between students and faculty in the School of Engineering, the Schools of Business, Medicine, and Public Health and the College of Arts and Sciences. Interdisciplinary Engineering students have opportunities to develop a plan of study and a dissertation research topic that incorporates coursework and faculty expertise from two or more of disciplines across UAB.

The interdisciplinary program will:

- Provide a rigorous academic curriculum including coursework in two or more disciplines
- Provide collaborative interactions with students and faculty from a variety of disciplines
- Provide unique opportunities for interdisciplinary research
- Facilitate continued development of high-quality research programs supported by external funding.

Admission Requirements

Admission decisions are made on the basis of prior education, GPA, test scores, personal statement, professional experience, and recommendations.

In addition to the Graduate School admission requirements, admission to the Interdisciplinary Engineering PhD program includes the following:

- Undergraduate or graduate degree in Engineering. Applicants who do not meet this criterion but who have an outstanding academic record in a related field may be admitted but will be required to complete a sequence of undergraduate courses (including prerequisites as appropriate) in addition to the normal requirements of the IE PhD degree
- Minimum GPA of 3.0 on a 4.0 scale on most recent degree
- GRE is not required
- Personal statement identifying research interest
- CV/Résumé
- 3 academic or professional recommendations
- Interview with Program Director and Manager
- International applicants must submit English proficiency scores in accordance with UAB Graduate School requirement. [Click here for details](#)
- Original transcripts from all colleges and universities attended since high school must be sent directly to the UAB Graduate School (detailed instructions are included during the online application process);

Deadline for Entry Term(s):	Fall: August 1; Spring: December 1; Summer: May 1
Deadline for All Application Materials to be in the Graduate School Office:	Seven days before term begins

Degree Requirements

Graduate Committee

Because of the interdisciplinary nature of the program, the graduate study committee (dissertation committee) is important. The committee will oversee the selection of courses and direction of research. Students must form a graduate committee within the first year of study and must meet with the committee no less than once per academic year. Committees must have at least five members selected from at least two different Schools/Colleges, with a minimum of two faculty with primary appointment in the School of Engineering.

Coursework

The IE PhD promotes a research-based curriculum with a set of core courses required of all students in the program. Additional coursework is directed by the student's graduate study committee based on the student's area of interest. The planned curriculum must result in training in two or more disciplines, which is defined as courses offered outside the School of Engineering.

Students entering the PhD program with a baccalaureate degree must, in keeping with UAB Graduate School policies, complete at least 48 hours of coursework prior to admission to candidacy. Up to 16 of the 48 credits can be non-dissertation research, and up to 10 credits can be a combination of laboratory rotations, seminars, and directed study.

Students entering the PhD program with a Master's degree in a related field, MD, DMD, etc., must complete at least 27 credit hours of coursework prior to candidacy. Up to 6 credits of the 27 can be non-dissertation research credits, and up to 6 credits can be as lab rotations, seminars, or directed study credits.

For all students, at least 24 hours of dissertation research are required and must be taken over at least two semesters after admission to candidacy.

Students entering with a baccalaureate degree must complete the following:

Requirements	Hours
Journal Club - 4 enrollments of 1 hour each	4
EGR 796 Journal Club in Interdisciplinary Engineering ¹	
GRD 717 Principles of Scientific Integrity	3
Engineering Electives	9
Cross Disciplinary Electives	9
Dissertation Research	24
Additional Electives	23
Total Hours	72

¹ Students may substitute a different graduate-level seminar/journal club with permission of his/her faculty mentor and the program director.

Students entering with a Master's degree must complete the following:

Requirements	Hours
Journal Club - 4 enrollments of 1 hour each	4
EGR 796 Journal Club in Interdisciplinary Engineering ¹	
GRD 717 Principles of Scientific Integrity	3
Engineering Electives	9
Cross Disciplinary Electives	9
Dissertation Research	24
Additional Electives	2
Total Hours	51

¹ Students may substitute a different graduate-level seminar/journal club with permission of his/her faculty mentor and the program director.

In addition to the IE PhD program core courses (above), course selection is based on the research and career goals of the student, and curricula will vary between students. Students are guided by their faculty mentor (committee chair) and a graduate study committee composed of faculty representing an interdisciplinary team in the student's area of research interest. The coursework must include courses from at least two disciplines.

These courses will be completed under the guidance of the student's faculty mentor (graduate study committee chair). Non-dissertation research and dissertation research hours will be taken through the department of the student's faculty mentor.

Comprehensive Examination

Interdisciplinary Engineering PhD students are required to pass a comprehensive examination, which includes both written and oral components, and a dissertation proposal. The examination is administered by the student's graduate study committee. Upon

successful completion of the examination and at least 39 hours of coursework if entering with a baccalaureate degree or 18 hours of coursework if entering with a Master's degree, a student may apply for doctoral candidacy. All doctoral students must successfully complete GRD 717 prior to admission to candidacy.

Research and Dissertation

The dissertation is the summation of the doctoral studies and must demonstrate the ability to conduct, analyze, and defend independent research consistent with the dissertation proposal. The graduate study committee must provide feedback on the dissertation draft prior to scheduling the defense. Doctoral candidates present and defend their work before their graduate study committee and the public as their final examination. See the [UAB Graduate School](#) website for formatting guidelines and deadlines.

Additional Requirements

Students are required to present research at a local, regional, national, or international technical conferences and publish research findings in at least two peer-reviewed journals. The IE PhD program director will not approve the student's application for degree without evidence that the articles were published, are in press, or have been submitted.

PhD students are required to complete the degree within 7 years, per Graduate School requirement. Any student who does not meet this requirement must appeal to the Graduate School for an extension.

Additional Academic Policies

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the Interdisciplinary Engineering PhD without appeal to and approval from the Program Director.

The School of Engineering offers similar courses at the 400/500 and 600/700 levels. While the higher numbered course has more advanced content, there is a significant overlap in topics. Therefore, students are not allowed to take a 500-level or 700-level course for credit if they have previously taken the related 400-level or 600-level course, respectively.

Students admitted into the Interdisciplinary Engineering PhD program are not permitted to transfer to another program within the School of Engineering.