Chemical Engineering (MS)

Degree Requirements

With the ever-increasing pace of technological development in society, new opportunities are becoming available that require chemical engineering graduates with increased levels of specialization. The Department offers a Master of Science degree in Chemical Engineering that blends scholarship and research with advanced coursework to provide excellent training for students to pursue careers in the chemical industry. Graduate students have opportunities to undertake cutting-edge research with faculty for both thesis and project work. In addition, a course work-only program is also offered by the department for those who intend to further their professional development while pursuing a graduate degree. Students with a bachelor's degree in a major other than chemical engineering can qualify for admission by taking a prescribed series of undergraduate courses.

Admission To The MSChE Program

The following criteria supplement the College of Engineering admission criteria (see Admission To Graduate Programs):

I. Regular Admission Requirements
   A. A bachelors degree in chemical engineering.
   B. A grade-point average of 3.0 or greater (A=4.0) on all undergraduate work is required.
   C. A minimum score of 151 in the quantitative section and a minimum score of 141 in the verbal section of the Graduate Record Examination (GRE) is required.
   D. A minimum score of 79 in the internet-based TOEFL or a minimum band score of 6.5 in the IELTS is required.

II. Provisional Admission Requirements
   A. A bachelors degree in chemistry, physics, mathematics or engineering.
   B. A minimum grade-point average of 2.5 (A=4.0) on all undergraduate work is required.
   C. A minimum score of 151 in the quantitative section and a minimum score of 141 in the verbal section of the Graduate Record Examination (GRE) is required.
   D. A minimum score of 79 in the internet-based TOEFL or a minimum band score of 6.5 in the IELTS is required.

The minimum credit hour requirements for the different options pertaining to the MSChE degree are:

- Thesis Option 30 credit hours
- Project Option 30 credit hours
- Course Option 34 credit hours

Department Information

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<tr>
<th>Department of Chemical and Biomolecular Engineering Staff</th>
<th>(251) 460-6160</th>
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<tr>
<td>Chair</td>
<td>F. Carl Knopf</td>
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<tr>
<th>Professors</th>
<th>Knopf, Sylvester, Leavesley, West</th>
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<td>Associate Professors</td>
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<td>Assistant Professors</td>
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Department of Chemical and Biomolecular Engineering web site
http://www.southalabama.edu/colleges/engineering/chbe/index.html

Chemical Engineering is a profession in which knowledge of mathematics, chemistry, biology and other natural sciences gained by study, experience, and practice is applied with judgment to develop economical ways of using material and energy for the benefit of mankind. The program required for the degree of Bachelor of Science in Chemical Engineering provides fundamental instruction in mathematics, chemistry, biology, physics, and engineering. This education prepares the graduate
to seek employment in petrochemical, pharmaceutical, healthcare, microelectronics, polymers, energy and environmental industries. In addition, the graduate is adequately prepared to pursue graduate school.

Chemical engineering students are required to take the Chemical Engineering discipline specific Fundamentals of Engineering (FE) examination in Alabama or another state prior to graduation. All electives must be approved by the student’s advisor. Degree requirements include a minimum of 18 semester hours of approved electives in the Humanities and Social Sciences.

Satisfactory completion of the 126 hour program outlined below leads to a Bachelor of Science in Chemical Engineering. Students must also comply with the College of Engineering Requirements for a Degree, which are covered in the Bulletin under the College of Engineering.

**BSChE Program Educational Objectives**

The educational objectives of the Department of Chemical & Biomolecular Engineering’s undergraduate program are that, within a few years of program completion, graduates will have used the knowledge and skills gained through academic preparation and post-graduation experience so they have:

1. Advanced in the chemical engineering profession, obtained professional licensure, and applied engineering knowledge and problem-solving skills to multi-disciplinary projects.
2. Incorporated economic environmental, social, regulatory, constructability, safety, and sustainability considerations into the practice of chemical engineering.
3. Exhibited effective communication skills, teamwork, leadership, initiative, project management, and professional and ethical behavior.
4. Continued their technical and professional development, which may include graduate level education, continuing education, and participation in professional organizations.

**BSChE Student Outcomes**

By the time of graduation from the BSChE program, a student will have demonstrated attainment of the following outcomes:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve chemical engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use techniques, skills, and modern engineering tools necessary engineering practice.

The BSChE curriculum is designed to ensure the attainment of the student outcomes.

The Bachelor of Science in Chemical Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org