

# CHEMICAL ENGINEERING, MS

Our Master's program offers a streamlined educational experience that bolsters knowledge and professional skills in chemical engineering. The program covers basic subjects important to all chemical engineers, including thermodynamics, transport phenomena, kinetics and applied mathematics, along with coursework tailored to student interest.

All students in the thesis-based track (Plan I) conduct innovative, original research in faculty-run labs. All students in the non-thesis track (Plan II) complete specialized coursework in chemical engineering and a capstone experience.

The Master's degree typically requires one to two years to complete, depending on the intensity of study and whether a thesis is produced.

We welcome students with undergraduate degrees in chemical engineering, as well as in other related STEM fields such as chemistry, biology, and materials science and engineering. Students entering with a degree other than a BS ChemE, however, may require additional coursework, thereby adding time to the degree.

## Admissions

Admission is contingent upon recommendation by the graduate faculty of the Department of Chemical and Biological Engineering. Special opportunities are available for students with undergraduate degrees in fields other than chemical engineering.

See the Admission Criteria section of this catalog for more information.

## Curricular Requirements

### Master of Science-Thesis Option (Plan I): 30 Credit hours

Candidates for the master's degree under Plan I must earn a minimum of 24 semester hours of credit in coursework and write a thesis (a minimum of six semester hours of thesis research required).

- A minimum of 24 credit hours of coursework is required.
- A minimum of six hours of thesis research is required.
- A student's curriculum and thesis must be approved by the student's graduate advisory committee. The student must pass a final comprehensive examination, which is typically a presentation and defense of the thesis. In addition, the student must satisfy all University requirements defined in the current edition of The University of Alabama Graduate Catalog.

All graduate students in chemical engineering are required to pass the following core graduate courses:

Code and Title	Hours
<b>Required Core Course</b>	
CHE 551 Adv Thermodynamics I	3
CHE 552 Transport Phenomena	3
CHE 553 Computation In Chem Engr	3
CHE 554 Chemical Reaction Engr	3
<b>Elective Courses Options</b>	
CHE 512 Polymer Materials Engineering	
CHE 514 Computer Methods in ChemE	
CHE 516 Stem Cell Bioengineering	
CHE 518 Tissue Engineering	
CHE 540 Health Safety Chem Process Ind	

CHE 545	Intro to Biochemical Engr	
CHE 591	Special Problems	
CHE 592	Special Problems	
Additional elective course options available upon approval of Advisor		
<b>Thesis Research</b>		
CHE 599	Thesis Research	6
<b>Total Hours</b>		<b>30</b>

### Master of Science-Non-Thesis Option (Plan II): 30 Credit hours

Candidates for the master's degree under Plan II must earn a minimum of 30 semester hours of credit and complete a culminating or "Capstone experience" as described below.

- A minimum of 30 credit hours of coursework is required.
- A student's curriculum must be approved by the student's graduate advisory committee. The graduate advisory committee must also approve the submission of a manuscript, a conference proceeding or a graduate seminar presentation. This activity shall constitute The University of Alabama Graduate School culminating experience requirement for a MS Plan II degree in chemical engineering.
- The "Capstone Experience" consists of two required components:
  - a. First, a research presentation must be delivered to the faculty. The research presentation can be based on a literature review of a chemical engineering topic or a presentation of hands-on research results. The student must register for 1 hour of CHE 595 Seminar during the semester of the presentation (this 1 hour counts towards the total of 30 credit hours of coursework).
  - b. The second component is a mentored grading experience, CHE 591 Special Problems (1 to 4 hr.), and this will count towards the 30 credit hours of coursework. The student will gain first-hand experience with several aspects of the chemical engineering educational process (homework design, grading, test preparation, etc.).

Code and Title	Hours
<b>Required Core Courses</b>	
CHE 551 Adv Thermodynamics I	3
CHE 552 Transport Phenomena	3
CHE 553 Computation In Chem Engr	3
CHE 554 Chemical Reaction Engr	3
<b>Elective Courses Options</b>	
CHE 514 Computer Methods in ChemE	3
CHE 516 Stem Cell Bioengineering	3
CHE 512 Polymer Materials Engineering	
CHE 518 Tissue Engineering	
CHE 540 Health Safety Chem Process Ind	
CHE 545 Intro to Biochemical Engr	
CHE 592 Special Problems	
Additional elective course options available upon approval of Advisor	
<b>Capstone Experience Courses</b>	
CHE 595 Seminar	1

CHE 591 Special Problems

3

Total Hours

36

## Transfer Credit

Transfer credit information.

## Accelerated Master's Program

Information on the Accelerated Master's Program.

## Comprehensive Exam/Capstone

- The "Capstone Experience" consists of two required components:
  - a. First, a research presentation must be delivered to the faculty. The research presentation can be based on a literature review of a chemical engineering topic or a presentation of hands-on research results. The student must register for 1 hour of CHE 595 Seminar during the semester of the presentation (this 1 hour counts towards the total of 30 credit hours of coursework).
  - b. The second component is a mentored grading experience, CHE 591 Special Problems (1 to 4 hr.), and this will count towards the 30 credit hours of coursework. The student will gain first-hand experience with several aspects of the chemical engineering educational process (homework design, grading, test preparation, etc.).

## Plan I – Thesis Process Requirements

Candidates for the master's degree under Plan I must earn a minimum of 24 semester hours of credit in coursework and write a thesis (a minimum of six semester hours of thesis research required).

- A minimum of 24 credit hours of coursework is required.
- A minimum of six hours of thesis research is required.
- A student's curriculum and thesis must be approved by the student's graduate advisory committee. The student must pass a final comprehensive examination, which is typically a presentation and defense of the thesis. In addition, the student must satisfy all University requirements defined in the current edition of The University of Alabama Graduate Catalog.

## Plan II – Non-Thesis Process Requirements

Candidates for the master's degree under Plan II must earn a minimum of 30 semester hours of credit and complete a culminating or "Capstone experience" as described below.

- A minimum of 30 credit hours of coursework is required.
- A student's curriculum must be approved by the student's graduate advisory committee. The graduate advisory committee must also approve the submission of a manuscript, a conference proceeding or a graduate seminar presentation. This activity shall constitute The University of Alabama Graduate School culminating experience requirement for a MS Plan II degree in chemical engineering.

## Time Limits For Degree Completion Requirements

Information on time limits for degree completion.

## Academic Misconduct Information

Academic misconduct information.

## Withdrawals and Leave of Absence Information

Information on withdrawals and leave of absence.

## Academic Grievances Information

Academic grievances information.

## Grades and Academic Standing

Grades and academic standing information.

## Graduate School Deadlines Information

Graduate School Deadlines information.

## Application For Graduation Information

Application for graduation information.