

# MASTER OF CHEMICAL ENGINEERING (MChE) DEGREE

## Program Learning Outcomes for the MChE Degree

Upon completing the MChE degree, students will be able to:

1. Identify, formulate, and solve complex engineering problems that require synthesis of advanced knowledge in chemical engineering fundamentals.
2. Demonstrate broad advanced knowledge in science and math, and depth in one chemical engineering sub-discipline (energy engineering, biomolecular engineering, materials science).
3. Demonstrate knowledge of business policies and practices in the current business environment in identifying, formulating, and solving engineering challenges in a problem/engineering challenge they undertake to solve as part of independent study.
4. Demonstrate effective oral and written communication skills.

## Requirements for the MChE Degree

The MChE degree is a non-thesis master's degree. For general university requirements, please see [Non-Thesis Master's Degrees \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Students pursuing the MChE degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum of 24 graduate semester credit hours must be taken in standard or traditional courses (with a course type of lecture, seminar, laboratory, lecture/laboratory).
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A maximum of 2 courses (6 graduate semester credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the [Policies](#) (p. 1) tab.
- A minimum of 5 courses (15 credit hours) from the Core Requirements.
- A minimum of 5 courses (15 credit hours) from Elective Requirements, covering core chemical engineering principles.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum program GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree with a minimum grade of B- (2.67 grade points) in each course.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor, or

where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (<https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/>). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

## Summary

Code	Title	Credit Hours
Total Credit Hours Required for the MChE Degree		30

## Degree Requirements

Code	Title	Credit Hours
<b>Core Requirements</b>		
CHBE 501	FLUID MECHANICS AND TRANSPORT PROCESSES	3
CHBE 505	ADVANCED NUMERICAL METHODS WITH ENGINEERING APPLICATIONS <sup>1</sup>	3
CHBE 590	KINETICS, CATALYSIS, AND REACTION ENGINEERING	3
CHBE 602	PHYSICO-CHEMICAL HYDRODYNAMICS	3
CHBE 611	ADVANCED TOPICS-THERMODYNAMICS	3
<b>Elective Requirements</b>		
Select 5 elective courses at the 500-level or above <sup>2</sup>		15
<b>Total Credit Hours</b>		<b>30</b>

## Footnotes and Additional Information

- <sup>1</sup> As an alternative to CHBE 505, CHBE 692 - *Applied Mathematics for Chemical Engineering I* - may be taken to fulfill this mathematics requirement. Students should consult with the Program Advisor when selecting CHBE 692.
- <sup>2</sup> At least 1 of the elective courses must be completed from a departmental (CHBE) course offering.

## Policies for the MChE Degree

### Department of Chemical and Biomolecular Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Chemical and Biomolecular Engineering publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2021\\_22/Chemical\\_Biomolecular\\_Engineering\\_MChE\\_Graduate\\_Handbook.pdf](https://gradhandbooks.rice.edu/2021_22/Chemical_Biomolecular_Engineering_MChE_Graduate_Handbook.pdf)

## Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

## Departmental Transfer Credit Guidelines

Students pursuing the MChE degree should be aware of the following departmental transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Requests for transfer credit will be considered by the program director on an individual case-by-case basis.

### **Additional Information**

For additional information, please see the Chemical and Biomolecular Engineering website: <https://chbe.rice.edu/>

## **Opportunities for the MChE Degree**

### **Fifth-Year Master's Degree Option for Rice Undergraduate Students**

In certain situations and with some terminal master's degree programs, Rice students have an option to pursue a master's degree by adding an additional fifth year to their four years of undergraduate studies.

Advanced Rice undergraduate students in good academic standing typically apply to the master's degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate major advisor and the master's degree program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this *Undergraduate - Graduate Concurrent Enrollment* opportunity, including specific information on the registration process can be found [here \(https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/\)](https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/).

Rice undergraduate students completing studies in science and engineering may have the option to pursue the Master of Chemical Engineering (MChE) degree. For additional information, students should contact their undergraduate major advisor and the MChE chair of the department graduate studies committee.

### **Additional Information**

For additional information, please see the Chemical and Biomolecular Engineering website: <https://chbe.rice.edu/>