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/). 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/).

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MChE Degree</td>
<td>30</td>
</tr>
</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Degree Requirements</td>
<td></td>
</tr>
</tbody>
</table>

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 505</td>
<td>ADVANCED NUMERICAL METHODS WITH ENGINEERING APPLICATIONS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 590</td>
<td>KINETICS, CATALYSIS, AND REACTION ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 602</td>
<td>PHYSICO-CHEMICAL HYDRODYNAMICS</td>
<td>3</td>
</tr>
<tr>
<td>CHBE 611</td>
<td>ADVANCED TOPICS-THERMODYNAMICS</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Requirements

Select 5 elective courses at the 500-level or above

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elective Requirements</td>
<td>15</td>
</tr>
</tbody>
</table>

Total Credit Hours

|        | Total Credit Hours                         | 30           |

Footnotes and Additional Information

1 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.

2 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

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). 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:

2021-2022 General Announcements PDF Generated 02/15/22
• 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/).

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/