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 (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 (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 (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 6 courses (18 credit hours) from departmental (CHBE) course offerings, which includes 5 CHBE core courses and 1 additional CHBE elective course.
- A minimum overall GPA of 2.67.
- A minimum GPA of 2.67 in required coursework 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).) 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>
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### Degree Requirements

#### Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CHBE 501</td>
<td>FLUID MECHANICS AND TRANSPORT PROCESSES</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>
<tr>
<td>CHBE 692</td>
<td>APPLIED MATHEMATICS FOR CHEMICAL ENGINEERING</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Elective Requirements

Select 5 elective courses at the 500-level or above

Total Credit Hours 15

### Footnotes and Additional Information

1. Upon approval of their advisor, students may substitute CHBE 692 with a comparable Math course offered by another department.

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: http://gradhandbooks.rice.edu/2018_19/Chemical_Biomolecular_Engineering_Graduate_Handbook.pdf.

#### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit (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.

### 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

Rice students have an option to pursue the Master of Chemical Engineering (MCHE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCHE 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 advisor and the (MChE) chair of the department graduate studies committee.

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 (ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment).

**Additional Information**

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