Chemical and Biochemical Engineering, PhD

Requirements

The Doctor of Philosophy program in chemical and biochemical engineering requires a minimum of 72 s.h. of graduate credit. However, the degree is granted primarily on the basis of research achievement rather than on the accumulation of semester hours. Students must maintain a cumulative grade-point average (GPA) of at least 3.25.

All students must complete a core curriculum, which consists of one course each in transport phenomena, chemical thermodynamics, chemical reaction kinetics, technical communication, and data science plus five additional courses (total of 30 s.h.).

Students entering with a degree other than chemical engineering may need to take additional coursework to attain proficiency in core areas of chemical engineering.

The PhD with a major in chemical and biochemical engineering requires the following coursework.

Core Courses

Students must complete the five core courses with a minimum GPA of 3.50.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>All of these:</td>
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<tr>
<td>CBE:5105</td>
<td>Introduction to Literature Review and Proposal Writing</td>
<td>3</td>
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<tr>
<td>CBE:5110</td>
<td>Intermediate Thermodynamics</td>
<td>3</td>
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<tr>
<td>CBE:5115</td>
<td>Transport Phenomena I</td>
<td>3</td>
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<tr>
<td>CBE:5120</td>
<td>Data Science in Chemical and Engineering Systems</td>
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Kinetics

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<tr>
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<th>Hours</th>
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<tr>
<td>One of these:</td>
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<tr>
<td>CBE:3205</td>
<td>Introduction to Biochemical Engineering</td>
<td>3</td>
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<tr>
<td>CBE:5315</td>
<td>Polymer Chemistry</td>
<td>3</td>
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<tr>
<td>CBE:5425</td>
<td>Atmospheric Chemistry and Physics</td>
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Breadth Requirement

Students take a 3 s.h. course taught in the Department of Chemical and Biochemical Engineering (prefix CBE) in an area outside their prior graduate degree training and research specialization area.

Electives

Students supplement the core curriculum with electives tailored to their research area.

Additional Requirements

All students are required to take ENGR:7270 Engineering Ethics during their first semester and CBE:5000 Seminar in Chemical and Biochemical Engineering every semester in residence. Students earn the remainder of credit for the degree in elective courses and research.

In addition to a minimum GPA in the five core courses, students are required to pass a comprehensive examination before they can become candidates for degree. The comprehensive examination is the presentation and defense of the candidate's research proposal. These examinations are arranged by members of the examining committee and may be repeated at the committee's discretion. Comprehensive examination policies are published in the Manual of Rules and Regulations on the Graduate College website. A final examination, which is a defense of the thesis, completes the doctoral program.

For a detailed description of program requirements, see Graduate Program on the Department of Chemical and Biochemical Engineering website.