MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Mode of Instruction</th>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW-Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

General Requirements

- Minimum Credit Requirement: 51 credits
- Minimum Residence Credit Requirement: 32 credits
- Minimum 26 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework Requirement policy: https://policy.wisc.edu/library/UW-1244/.
- Overall 3.00 GPA required.

Graduate GPA Requirement: Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203/.

Other Grade Requirements

- At least two of the core Chemical and Biological Engineering graduate classes must be taken in the first semester of residence in the graduate program, and at least four core graduate classes must be completed with grades of B or better, preferably by the end of the second semester of residence. A student who receives one grade of BC or lower in a core graduate class but who wishes to remain in the PhD program must take the fifth core course or re-take the low graded core course, preferably in the third semester, and the student must receive a B or better.

- A student who receives more than one grade of BC or lower in core graduate classes will be placed in the MS program. Upon successful completion of the MS program, the student may petition the full faculty to return to the PhD program.

- A student who receives an average of 3.0 or higher on their preliminary exam becomes a candidate for the PhD program. A student who does not receive an average score of 3.0 or higher in the qualifying process is placed in the MS program. Upon successful completion of the MS program, the student may petition the full faculty to return to the PhD program.

- A doctoral student who has met the grade requirements must complete a preliminary exam in the second semester of their second year. The preliminary exam consists of a written report and oral examination.

- During the first semester of the fourth year of the program, PhD Candidates will participate in a mandatory research progress meeting with their thesis committee.

- All doctoral students are required to complete a doctoral minor or graduate/professional certificate. Refer to the Graduate School: Breadth Requirement in Doctoral Training policy: https://policy.wisc.edu/library/UW-1200/.

- Graduate School Breadth Requirement: 2 CBE Electives
- 1 PhD Elective

REQUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 620</td>
<td>Intermediate Transport Phenomena</td>
<td>3</td>
</tr>
<tr>
<td>CBE 660</td>
<td>Intermediate Problems in Chemical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CBE 710</td>
<td>Advanced Chemical Engineering Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>CBE 735</td>
<td>Kinetics and Catalysis</td>
<td>3</td>
</tr>
<tr>
<td>CBE 781</td>
<td>Biological Engineering: Molecules, Cells &amp; Systems</td>
<td>3</td>
</tr>
<tr>
<td>2 CBE Electives</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>1 PhD Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
Breadth Requirement at least 9

Total Credits 51

- Grades of B or better are required in all Chemical and Biological Engineering courses used towards degree requirements.
- Chemical and Biological Engineering Elective courses shall be in the range numbered 500–899 and will not be laboratory courses, Independent Studies or Research.
- The requirement of four core Chemical and Biological Engineering graduate courses shall not be met by substitution of other courses.

Students taking advanced courses outside the department in excess of breadth requirements may, with department approval, use up to two of these courses toward the requirement of two Chemical and Biological Engineering Elective courses. Seminar courses may not be used to satisfy Chemical and Biological Engineering Elective course requirements.

**PhD Elective Course Requirement**

Students must complete at least one course from another program outside Chemical and Biological Engineering totaling at least three credits. Courses must be numbered 300 and above. A B average is required. Pass/fail or audit courses may not be used for the elective course requirement. Courses used to satisfy the breadth program may not be used for the PhD Elective course requirement. Advisor approval is required and secured through submission of the PhD Elective Course Approval Form. PhD Elective courses can be foreign language courses.

**Breadth Requirement**

The breadth requirement is designed to represent a coherent body of work and should not be simply an after-the-fact ratification of a number of courses taken outside the major department. To ensure coherence, the student must consult with his or her advisor. The minor/certificate should be submitted for approval at an early date, before the student is halfway through the proposed course sequence.

**Teaching Assistantship**

Each student in the PhD program is required to serve as a teaching assistant (TA) for two semesters. Under normal circumstances, each student should serve as a teaching assistant one semester of the second year and one semester of the third year. Requests for alternate arrangements, partial or full waiver of the requirement, should be submitted in writing to the Graduate Program Committee.