

# CHEMICAL AND BIOLOGICAL ENGINEERING MS

## Degree Requirements

The following requirements are in addition to, or further elaborate upon, those requirements outlined in The Graduate School Policy Guide (<https://catalogs.northwestern.edu/tgs/academic-policies-procedures/>).

The Chemical and Biological Engineering program offers a Coursework Master's and a Thesis Master's. The different requirements are described below.

### Coursework Master's

Total Units Required: 10<sup>1</sup>

Course	Title
<b>Department Core Courses (3 units)</b>	
Choose three from core chemical engineering topics:	
CHEM_ENG 421-0	Fluid Mechanics
CHEM_ENG 422-0	Heat and Mass Transfer
CHEM_ENG 408-0	Chemical Engineering Kinetics and Reactor Design
CHEM_ENG 404-0	Advanced Thermodynamics
<b>Electives (7 units)</b>	
Department Electives (3 units)	
Three electives must be taken within the department.	
Additional Electives (4 units)	
Additional electives may be from within or outside the department from approved math, science, Chemical Engineering, or other engineering courses.	

<sup>1</sup> For coursework master's: at least 6 courses in Chemical and Biological Engineering are required; this includes the 3 required distribution courses.

### Other Coursework MS Degree Requirements

- **Examinations:** none specified
- **Research/Projects:** none specified
- **Master's Thesis:** none specified
- **Other:** students are urged but not required to attend the departmental research seminar and fall-quarter seminars on professional skills.

### Thesis Master's

Total Units Required: 10<sup>2</sup>

Course	Title
<b>Department Core Courses (3 units)</b>	
Choose three from core chemical engineering topics:	
CHEM_ENG 421-0	Fluid Mechanics
CHEM_ENG 422-0	Heat and Mass Transfer
CHEM_ENG 408-0	Chemical Engineering Kinetics and Reactor Design
CHEM_ENG 404-0	Advanced Thermodynamics
<b>Electives (4 units)</b>	
Department Electives (1 unit): One elective must be taken within the department.	
Additional Electives (3 units): Additional electives may be from within or outside the department from approved math, science, Chemical Engineering, or other engineering courses.	
<b>Research (3 units)</b>	

3 unit thesis (three units of independent study projects)

CHEM_ENG 499-0	Projects
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<sup>2</sup> For thesis master's: at least 4 courses in Chemical and Biological Engineering are required; this includes the 3 required distribution courses.

### Other Thesis MS Degree Requirements

- **Departmental Seminar:** students are urged but not required to attend
- **Short Courses:** Students are required to attend the Responsible Conduct of Research course. Students are recommended to attend a Fall-quarter seminar on Professional Skills.
- **Examinations:** defense of thesis
- **Research/Projects:** towards thesis
- **Master's Thesis:** based on current research in the field
- **Other:** Students are urged but not required to attend the departmental research seminar and fall-quarter seminars on professional skills.