

Chemical and Biochemical Engineering, MS

Requirements

The Master of Science program in chemical and biochemical engineering requires a minimum of 30 s.h. and is offered with and without thesis. All students must maintain a Graduate College program grade-point average (GPA) of at least 3.00.

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 MS in chemical and biochemical engineering requires the following coursework.

Core Courses

Students must maintain a GPA of at least 3.25 in the five core courses. All core courses must be taken on an A-F graded basis.

Course #	Title	Hours
One of these:		
CBE:5104	Introduction to Literature Review and Technical Writing (MS without thesis)	3
CBE:5105	Introduction to Literature Review and Proposal Writing (MS with thesis)	3
All of these:		
CBE:5110/ME:5210	Intermediate Thermodynamics	3
CBE:5115	Transport Phenomena I	3
CBE:5120	Data Science in Chemical and Engineering Systems	3
One of these:		
CBE:3205	Introduction to Biochemical Engineering	3
CBE:5315	Polymer Chemistry	3
CBE:5425/CEE:5115	Atmospheric Chemistry and Physics	3

Elective Courses

Students complete 15 s.h. of elective courses. All electives must be taken on an A-F graded basis, with the exception of CBE:5999 for students completing a thesis. Students supplement the core curriculum with electives tailored to their interests and chosen in conjunction with their advisor.

Students completing a thesis are permitted, but not required, to take a maximum of 6 s.h. in CBE:5999 MS Thesis Research: Chemical and Biochemical Engineering and apply it toward the elective requirement. This course can be taken on either an A-F or S/U graded basis. Students completing the program without thesis may not apply this course toward elective requirements.

Students select electives from courses numbered 3000 or above in the subjects listed below, excluding independent study courses.

Course #	Title	Hours
Subjects in the College of Engineering		
	Chemical and biochemical engineering (prefix CBE), excluding CBE:3998, CBE:5000, CBE:5100, and CBE:7999	
	Biomedical engineering (prefix BME), excluding BME:3995, BME:3998, BME:5998, BME:5999, and BME:7999	
	Civil and environmental engineering (prefix CEE), excluding CEE:3998, CEE:5998, CEE:5999, and CEE:7999	
	Core engineering courses (prefix ENGR), excluding ENGR:4000 and ENGR:4001	
	Electrical and computer engineering (prefix ECE), excluding ECE:3998, ECE:5998, ECE:5999, and ECE:7999	
	Industrial and systems engineering (prefix ISE), excluding ISE:3998, ISE:5998, ISE:5999, ISE:7998, and ISE:7999	
	Mechanical engineering (prefix ME), excluding ME:4098, ME:6198, ME:6199, and ME:7299	
Subjects in Other Colleges		
	Biochemistry and molecular biology (prefix BMB), excluding BMB:3800, BMB:3993, BMB:4999, BMB:5215, BMB:5261, and BMB:7292	
	Chemistry (prefix CHEM), excluding CHEM:3994, CHEM:6990, and CHEM:7999	
	Computer science (prefix CS), excluding CS:3990, CS:5990, CS:6990, and CS:7990	
	Earth, environment, and sustainability (prefix SEES), excluding SEES:3150, SEES:3190, SEES:3992, SEES:4990, SEES:4995, SEES:6190, SEES:7990, and SEES:7999	
	Informatics (prefix IGPI), excluding IGPI:5015, IGPI:6510, IGPI:6515, and IGPI:6520	
	Mathematics (prefix MATH), excluding MATH:3996, MATH:3997, and MATH:7990	
	Microbiology (prefix MICR), excluding MICR:4161, MICR:5264, and MICR:7261	
	Occupational and environmental health (prefix OEH), excluding OEH:7000, OEH:7020, or OEH:7040	
	Pharmacy (prefix PHAR), excluding PHAR:3994, PHAR:3995, PHAR:5520, PHAR:6120, PHAR:6305, PHAR:6320, PHAR:6515, PHAR:6720, and PHAR:6820	
	Physics (prefix PHYS), excluding PHYS:4990, PHYS:4999, PHYS:7990, and PHYS:7992	

Additional Requirements

All students must take ENGR:7270 Engineering Ethics (1 s.h.) during their first semester. Students completing a thesis are required to take CBE:5000 Seminar in Chemical and Biochemical Engineering (1 s.h.) each semester in residence. MS thesis students are required to present in the CBE:5000 seminar once before they graduate. Thesis students are also required to serve as a teaching assistant at least once during the duration of their graduate studies. Students not completing a thesis must take CBE:5100 Graduate Professional Development Seminar (1 s.h.) each semester in residence. Credit from these courses does not apply to the degree.

Students in the nonthesis program may petition for entry into the thesis program or the PhD program by requesting a change of status through the Graduate College. The request is reviewed by the Graduate Admissions Committee. If approved by the committee, the request is forwarded to the chemical and biochemical engineering faculty for final approval. Students then are assigned to research advisors as though they are newly admitted graduate students. For a detailed description of program requirements, see Graduate Program on the Department of Chemical and Biochemical Engineering website.

All students must pass a final examination.

Professional Development Experience

Professional growth extends beyond the curriculum and the research laboratory. Graduate professionals must be able to identify and lead educational and research enterprises that advance the scope and impact of the discipline. Important skills include building professional networks, developing a comprehensive outlook for identifying emerging directions in the field, the ability to explain scientific and engineering principles to a variety of audiences, and more. Some examples of professional development experiences include an industrial internship, a second teaching assistant experience, teacher training, organizing a session at a national conference, and organizing a local conference. A student's professional development experience must be developed in consultation with their research mentor and approved by the director of graduate studies. The professional development experience is required for MS thesis students.