IOWA | Chemical and Biochemical Engineering

POLYMERS FOCUS AREA

Summary

The polymers focus area introduces students to the science and engineering of polymeric materials, including their synthesis, processing, characterization, and performance in a wide range of applications. Students learn how molecular structure, composition, and manufacturing methods influence polymer properties such as strength, flexibility, durability, and chemical resistance. This knowledge is essential for developing and improving products used in packaging, consumer goods, coatings, adhesives, biomedical devices, and industrial applications. This pathway prepares students for careers in polymer development, product design, manufacturing, processing, and quality engineering, where chemical engineers play a key role in creating innovative and sustainable polymer-based solutions.

Focus Area Requirements

In addition to the core chemical engineering requirements, you must choose a focus area and complete 12 s.h. toward that focus area. Below are the lists of possible focus area electives that can fulfill this requirement for the polymers focus area. If you feel another course would fit within this requirement, you must get approval from the department undergraduate director to have it count.

Required Focus Area Elective 3 s.h. (pick one from list below)

Offered	Course	s.h.
S-ODD	CBE:5310 Polymer Science and Technology	3

Focus Area Electives 9 s.h. (pick from list below)

Offered	Course	s.h.
F-EVEN	CBE:5315 Polymer Chemistry (recommended)	3
F/S	CBE:5999 Contemporary Topics: Chem & Biochem Engr-Petroleum Refining (recommended)	1
F-ODD	CBE:5740 Engineering Principles of Drug Delivery	3
S-EVEN	CBE:5410 Electrochemical Engineering	3
S-EVEN	CBE:4125 Advanced Process Safety	3
F	ISE:2360 Design for Manufacturing	3
S	BME:2500 Biomaterials and Biomechanics (P: 2110)	3

Other Electives that Align with this Focus Area

In addition to the focus area electives listed above, you will be required to complete the following electives to complete your degree: the Advanced Chemistry Elective (3 s.h.), the Advanced Chemistry Lab Elective, the Advanced Science Elective (3 s.h.), the Engineering Be Creative General Education Elective (3 s.h.), and the Cultural Perspectives, Values, & Society General Education Elective (3 s.h.). ***These do not count toward your focus area electives.*** Below are lists of possible courses to fulfill these requirements that align with this focus area.

Statistics Requirement 3 s.h. (possible courses that align with this focus area)

Offered	Course	s.h.
S	CBE:3020 Applied Statistics for Chemical and Natural Resources Engineering (recommended)	3
ALL	STAT:2020 Probability and Statistics for Engineers	3
ALL	STAT:3510 Biostatistics	3

Advanced Chemistry Elective 3 s.h. (possible courses that align with this focus area)

Offered	Course	s.h.
ALL	CHEM 3000+ Level	3
ALL	BMB 3000+ Level	

Advanced Chemistry Lab Elective 3 s.h. (possible courses that align with this focus area)

Offered	Course	s.h.
ALL	CHEM:2210 Fundamental of Chemical Measurements Lab	3
ALL	CHEM:2220 Organic Chemistry Lab	3
ALL	CHEM:2240 Organic Chemistry for Majors Lab	3

Advanced Science Elective 3 s.h. (possible courses that align with this focus area)

Offered	Course	s.h.
F-EVEN	CBE:5315 Polymer Chemistry (if not taken as focus area)	3
ALL	See Advanced Science List	3