CHEMICAL ENGINEERING, CO-OP OPTION, BS

Bachelor of Science in Chemical Engineering with Co-op (420005BS)

This option of the undergraduate program in Chemical Engineering includes a cooperative education component.

The following information has official approval of the **Department of Chemical, Biomolecular, and Corrosion Engineering** and **The College of Engineering and Polymer Science**, but is intended only as a supplemental guide. Official degree requirements are established at the time of transfer and admission to the degree-granting college. Students should refer to the Degree Progress Report (DPR) which is definitive for graduation requirements. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

Requirements

Summary

Code	Title	Hours
General Education Requirements (https://bulletin.uakron.edu/undergraduate/general-education/) *		29
Natural Science		34
Advanced Chemistry		11
Engineering Core		11
Chemical Engineering		42
Electives		9
Total Hours		136

* Several courses required for the major also satisfy General Education requirements. The University minimum of 34 credits are required for General Education and credit for these courses will apply to both.

General Education Courses

Code	Title	Hours
Students pursuing a bachelor's degree must complete three tiers of General Education coursework. Tiers I and II provide students with foundational skills and breadth of disciplinary knowledge. Tier III courses require students to integrate knowledge, understand diverse perspectives, and think critically about complex issues. Courses tagged for Tier III may also fulfill major or Disciplinary Area requirements.		
Tier I: Academic Foundations		**12**
Quantitative Reasoning: 3 credit hours		
Speaking: 3 credit hours		
Writing: 6 credit hours		
Tier II: Disciplinary Areas		**22**
Arts/Humanities: 9 credit hours		
Natural Sciences: 7 credit hours		
Social Sciences: 6 credit hours		
Tier III: Tagged Courses		
Select one class from each of the following subcategories:		
Complex Systems		
Critical Thinking		
Domestic Diversity		
Global Diversity		
Review the General Education Requirements page for detailed course listings.		
Total Hours		34

Natural Science

Code	Title	Hours
3150:151	Principles of Chemistry I	3
3150:152	Principles of Chemistry I Laboratory	1
3150:153	Principles of Chemistry II	3
3150:154	Qualitative Analysis	2
3450:xxx	Advanced Math Elective	2
3450:221	Analytic Geometry-Calculus I	4
3450:222	Analytic Geometry-Calculus II	4
3450:223	Analytic Geometry-Calculus III	4
3450:335	Introduction to Ordinary Differential Equations	3
3650:291	Elementary Classical Physics I	4
3650:292	Elementary Classical Physics II	4
Total Hours		34

Advanced Chemistry

Code	Title	Hours
3150:263	Organic Chemistry Lecture I	3
3150:264	Organic Chemistry Lecture II	3
3150:265	Organic Chemistry Laboratory I	2
3150:314	Physical Chemistry Lecture II	3
Total Hours		11

Engineering Core

Code	Title	Hours
4200:121	Chemical Engineering Computations	2
4200:305	Materials Science	2
4300:201	Statics	3
4400:307	Basic Electrical Engineering	4
Total Hours		11

Chemical Engineering

Code	Title	Hours
4200:101	Tools for Chemical Engineering	2
4200:110	Project Management and Teamwork I	1
4200:200	Material & Energy Balances	4
4200:210	Project Management and Teamwork II	1
4200:220	Introduction to Thermodynamic Processes	3
4200:310	Project Management and Teamwork III	1
4200:320	Phase Equilibrium Thermodynamics	3
4200:321	Transport Phenomena	3

4200:330	Chemical Reaction Engineering	3
4200:341	Process Economics	2
4200:351	Fluid & Thermal Operations	3
4200:353	Mass Transfer Operations	3
4200:360	Chemical Engineering Laboratory	3
4200:410	Project Management and Teamwork IV	1
4200:435	Process Analysis & Control	3
4200:441	Process Design I	3
4200:442	Process Design II	3
Total Hours		42

Electives

Code	Title	Hours
	Advanced Chemistry Elective	3
	Engineering Design Elective	3
	Engineering Science Elective	3
Total Hours		9

Recommended Sequence

1st Year

Fall Semester		**Hours**
3150:151	Principles of Chemistry I [1]	3
3150:152	Principles of Chemistry I Laboratory	1
3300:111	English Composition I [1,2]	3
3450:221	Analytic Geometry-Calculus I [1]	4
4200:101	Tools for Chemical Engineering	2
4200:110	Project Management and Teamwork I	1
	Hours	14
Spring Semester		
3150:153	Principles of Chemistry II [1]	3
3150:154	Qualitative Analysis	2
3450:222	Analytic Geometry-Calculus II [1]	4
4200:121	Chemical Engineering Computations	2
	Second Writing Course [1,3]	3
	General Education or Honor Distribution [4]	3
	Hours	17

2nd Year

Fall Semester		
3150:263	Organic Chemistry Lecture I	3
3150:265	Organic Chemistry Laboratory I	2
3450:223	Analytic Geometry-Calculus III [1]	4
3650:291	Elementary Classical Physics I [1]	4
4200:200	Material & Energy Balances	4
4200:210	Project Management and Teamwork II	1
	Hours	18
Spring Semester		
3150:264	Organic Chemistry Lecture II	3
3450:335	Introduction to Ordinary Differential Equations	3
3650:292	Elementary Classical Physics II [1]	4
4200:220	Introduction to Thermodynamic Processes	3
4300:201	Statics [1]	3
	Hours	16
Summer Semester		
4100:300	Cooperative Education Work Period (Possible)	
	Hours	0

3rd Year

Fall Semester		
3250:244	Introduction to Economic Analysis	3
4200:310	Project Management and Teamwork III	1
4200:320	Phase Equilibrium Thermodynamics	3
4200:321	Transport Phenomena	3
4200:341	Process Economics	2
4200:353	Mass Transfer Operations	3
	Advanced Math Elective	2
	Hours	17
Spring Semester		
4100:301	Cooperative Education Work Period	0
	Hours	0
Summer Semester		
3150:314	Physical Chemistry Lecture II	3
	General Education or Honors Distribution [4]	3
	Hours	6

4th Year

Fall Semester		
4100:302	Cooperative Education Work Period	0
	Hours	0
Spring Semester		
4200:305	Materials Science	2
4200:330	Chemical Reaction Engineering	3
4200:351	Fluid & Thermal Operations	3
4200:360	Chemical Engineering Laboratory	3
	General Education or Honors Distribution [4]	3
	Hours	14
Summer Semester		
4100:403	Cooperative Education Work Period	0
	Hours	0

5th Year

Fall Semester		
4200:410	Project Management and Teamwork IV	1
4200:435	Process Analysis & Control	3
4200:441	Process Design I	3
	General Education or Honors Distribution [4]	3
	Advanced Chemistry Elective	3
	Hours	13
Spring Semester		
4200:442	Process Design II	3
4400:307	Basic Electrical Engineering	4
4200:xxx	Chemical Engineering Elective [5]	3
4200:xxx	Chemical Engineering Design Elective [5]	3
	General Education or Honors Distribution [4]	3

	General Electives	5
	Hours	21
	Total Hours	136

1 Honors sections may be available; check the schedule of classes.

2 The Chemical and Biomolecular Engineering Department recommends that English Composition I be used to satisfy writing course requirement but other choices are available. See the General Education Program for details.

3 Check General Education Program or Honors Distribution to find courses that satisfy the second writing course requirement.

4 Credit hours shown for General Education or Honors Distribution are general guidelines only. These courses should be chosen in accordance with the appropriate General Education curriculum guide (for non-honors students) or Honors Distribution (for honors students). Honors students must also ensure that their course selections meet additional requirements not shown on this curriculum guide.

5 Honors students must take the Honors Project, which may count as a Chemical Engineering Elective or Chemical Engineering Design Elective. Consult your academic advisor.