

# CORROSION ENGINEERING, CO-OP OPTION, BS

## Bachelor of Science in Corrosion Engineering with Co-op (425005BS)

This option of the undergraduate program in Corrosion 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 ( <a href="https://bulletin.uakron.edu/undergraduate/general-education/">https://bulletin.uakron.edu/undergraduate/general-education/</a> ) <sup>*</sup>	29
	Natural Science	32
	Advanced Chemistry	11
	Engineering Core	11
	Corrosion Engineering	37
	Electives	15
	<b>Total Hours</b>	<b>135</b>

\* 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
<b>Tier I: Academic Foundations</b>		<b>12</b>
	<i>Quantitative Reasoning: 3 credit hours</i>	
	<i>Speaking: 3 credit hours</i>	
	<i>Writing: 6 credit hours</i>	
<b>Tier II: Disciplinary Areas</b>		<b>22</b>
	<i>Arts/Humanities: 9 credit hours</i>	
	<i>Natural Sciences: 7 credit hours</i>	
	<i>Social Sciences: 6 credit hours</i>	

### 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
3450:221	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
	<b>Total Hours</b>	<b>32</b>

## 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
3150:424	Analytical Chemistry II	3
	<b>Total Hours</b>	<b>11</b>

## Engineering Core

Code	Title	Hours
4200:305	Materials Science	2
4250:105	Corrosion Engineering Computations	2
4300:201	Statics	3
4400:307	Basic Electrical Engineering	4
	<b>Total Hours</b>	<b>11</b>

## Corrosion Engineering

Code	Title	Hours
4200:110	Project Management and Teamwork I	1
4200:210	Project Management and Teamwork II	1
4200:220	Introduction to Thermodynamic Processes	3
4200:310	Project Management and Teamwork III	1
4200:321	Transport Phenomena	3
4200:410	Project Management and Teamwork IV	1
4250:101	Tools for Corrosion Engineering	2
4250:200	Material and Energy Balances for Corrosion Engineers	4
4250:300	Fundamentals of Aqueous Corrosion	3

4250:301	Aqueous Corrosion Lab I	1
4250:305	Aqueous Corrosion Prevention	3
4250:306	Aqueous Corrosion Lab II	1
4250:310	Fundamentals of Dry Corrosion	3
4250:311	High Temperature Corrosion Lab	1
4250:440	Corrosion Engineering Design I	3
4250:441	Corrosion Engineering Design II	3
4300:202	Introduction to Mechanics of Solids	3
Total Hours		37

## Electives

Code	Title	Hours
	Chem/Bio Elective	3
	Corrosion Engineering Elective	6
	Corrosion Engineering Design Elective	6
Total Hours		15

## Recommended Sequence

### 1st Year

Fall Semester		Hours
3150:151	Principles of Chemistry I <sup>1</sup>	3
3150:152	Principles of Chemistry I Laboratory	1
3300:111	English Composition I <sup>1,2</sup>	3
3450:221	Analytic Geometry-Calculus I <sup>1</sup>	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 <sup>1</sup>	3
3150:154	Qualitative Analysis	2
3450:222	Analytic Geometry-Calculus II <sup>1</sup>	4
4200:121	Chemical Engineering Computations	2
	Second Writing Course <sup>1,3</sup>	3
	General Education or Honor Distribution <sup>4</sup>	3
Hours		17

### 2nd Year

Fall Semester		Hours
3150:263	Organic Chemistry Lecture I	3
3150:265	Organic Chemistry Laboratory I	2
3450:223	Analytic Geometry-Calculus III <sup>1</sup>	4
3650:291	Elementary Classical Physics I <sup>1</sup>	4
4200:210	Project Management and Teamwork II	1
4250:200	Material and Energy Balances for Corrosion Engineers	4
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 <sup>1</sup>	4
4200:220	Introduction to Thermodynamic Processes	3

4200:305	Materials Science	2
Hours		15

### Summer Semester

4100:300	Cooperative Education Work Period (Possible)	
Hours		0

### 3rd Year

#### Fall Semester

4200:310	Project Management and Teamwork III	1
4200:321	Transport Phenomena	3
4250:300	Fundamentals of Aqueous Corrosion	3
4250:301	Aqueous Corrosion Lab I	1
4300:201	Statics	3
4400:307	Basic Electrical Engineering	4
Hours		15

#### Spring Semester

4100:301	Cooperative Education Work Period	0
Hours		0

#### Summer Semester

4300:202	Introduction to Mechanics of Solids	3
	General Education or Honors Distribution <sup>4</sup>	3
Hours		6

### 4th Year

#### Fall Semester

4100:302	Cooperative Education Work Period	0
Hours		0

#### Spring Semester

3150:424	Analytical Chemistry II	3
3250:244	Introduction to Economic Analysis	3
4250:305	Aqueous Corrosion Prevention	3
4250:306	Aqueous Corrosion Lab II	1
3100:xxx/3150:xx	Biology or Chemistry Elective	3
	General Education or Honors Distribution <sup>4</sup>	3
Hours		16

#### Summer Semester

4100:403	Cooperative Education Work Period	0
Hours		0

### 5th Year

#### Fall Semester

4200:410	Project Management and Teamwork IV	1
4250:310	Fundamentals of Dry Corrosion	3
4250:311	High Temperature Corrosion Lab	1
4250:440	Corrosion Engineering Design I	3
4250:xxx	Corrosion Engineering Elective	3
	General Education or Honors Distribution <sup>4</sup>	3
Hours		14

#### Spring Semester

4250:441	Corrosion Engineering Design II	3
4250:xxx	Corrosion Engineering Elective	3
4xxx:xxx	Design Elective	3
4xxx:xxx	Design Elective	3
	General Education or Honors Distribution <sup>4</sup>	3

General Electives	5
Hours	20
Total Hours	135

- <sup>1</sup> Honors sections may be available; check the schedule of classes.
- <sup>2</sup> 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.
- <sup>3</sup> Check General Education Program or Honors Distribution to find courses that satisfy the second writing course requirement.
- <sup>4</sup> 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.