

# CHEMICAL ENGINEERING EMPHASIS, AS - WITH OREGON STATE UNIVERSITY

Program Code: AS.OSUCHEMENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify graphical, numerical, and analytical solutions to an audience through oral and written communication.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4.00
ENGR-111	Introduction to Engineering	3.00
MTH-251	Calculus I	5.00
WR-121Z	Composition I	4.00
<b>Credits</b>		<b>16</b>

### Winter Term

CH-221	General Chemistry	5.00
ENGR-112	Engineering Programming	3.00
MTH-252	Calculus II	5.00
WR-227Z	Technical Writing	4.00
<b>Credits</b>		<b>17</b>

### Spring Term

CH-222	General Chemistry	5.00
MTH-254	Vector Calculus	5.00
Social Processes Electives (p. 1)		4.00
<b>Credits</b>		<b>14</b>

### Summer Term

CH-223	General Chemistry	5.00
MTH-256	Differential Equations	4.00
<b>Credits</b>		<b>9</b>

### Second Year

#### Fall Term

CH-241	Organic Chemistry I	5.00
ENGR-211	Statics	4.00
PH-211	General Physics With Calculus	5.00
<b>Credits</b>		<b>14</b>

#### Winter Term

CH-242	Organic Chemistry II	5.00
CS-161	Computer Science I	4.00
PH-212	General Physics With Calculus	5.00
<b>Credits</b>		<b>14</b>

#### Spring Term

CH-243	Organic Chemistry III	5.00
ENGR-201	Electrical Fundamentals	4.00
PH-213	General Physics With Calculus	5.00
Western Culture Electives (p. 1)		4.00
<b>Credits</b>		<b>18</b>

**Total Credits** 102

## Social Processes Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4.00
EC-201	Principles of Economics: Micro	4.00
EC-202	Principles of Economics: Macro	4.00
HST-101	History of Western Civilization	4.00
HST-102	History of Western Civilization	4.00
HST-103	History of Western Civilization	4.00
PS-201	American Government and Politics	4.00
PS-204	Introduction to Comparative Politics	4.00
PS-205	International Relations	4.00
PS-225	Introduction to Political Ideologies	4.00
PSY-201Z	Introduction to Psychology I	4.00
PSY-202Z	Introduction to Psychology II	4.00
PSY-219	Introduction to Abnormal Psychology	4.00
PSY-231	Introduction to Human Sexuality	4.00
SOC-204	Introduction to Sociology	4.00
SOC-205	Social Stratification & Social Systems	4.00
SOC-206	Institutions & Social Change	4.00

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4.00
ART-205	History of Art/Romanesque Through Baroque	4.00
ART-206	History of Art/Enlightenment Through Contemporary	4.00
ENG-107	World Literature: Ancient Through Classical Times	4.00
ENG-108	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-109	World Literature: The 19th through 21st Centuries	4.00
ENG-201	Shakespeare	4.00
ENG-202	Shakespeare	4.00
ENG-204	British Literature: Ancient to Enlightenment	4.00

Code	Title	Credits
ENG-205	British Literature: Romantic to Contemporary	4.00
ENG-250	Greek Mythology	4.00
ENG-251	Celtic Mythology	4.00
ENG-253	American Literature: Pre-Columbian to Civil War	4.00
ENG-254	American Literature: 1865 to Present	4.00
ENG-255	American Literature: Topics in American Literature	4.00
GEO-208	Geography of the United States & Canada	4.00
HST-101	History of Western Civilization	4.00
HST-102	History of Western Civilization	4.00
HST-103	History of Western Civilization	4.00
HST-132	History of Language and the Written Word in Western Civilization	4.00
HST-201	History of the United States	4.00
HST-202	History of the United States	4.00
HST-203	History of the United States	4.00
PHL-102	Ethics	4.00
R-204	History of Christianity	4.00

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4.00
BI-102	General Biology; Animal Systems	4.00
BI-103	General Biology; Plants & The Ecosystem	4.00
BI-165CL	Natural History of the Oregon Coast with Lab	4.00
BI-175	Integrated Science Inquiry	4.00
BI-176	Integrated Science Inquiry	4.00
BI-177	Integrated Science Inquiry	4.00
BI-204	Elementary Microbiology	4.00
BI-211	General Biology for Science Majors (Cellular Biology)	5.00
BI-212	General Biology for Science Majors (Animal Biology)	5.00
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5.00
BI-234	Introductory Microbiology	4.00
ESR-171	Introduction to Environmental Science	4.00
ESR-172	Introduction to Climate Change	4.00
ESR-173	Introduction to Sustainability	4.00
Z-201	General Zoology	4.00
Z-202	General Zoology	4.00
Z-203	General Zoology	4.00

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4.00
ENG-213	U.S. Latinx Literature	4.00

Code	Title	Credits
ENG-252	Hindu Mythology	4.00
GEO-110	Cultural & Human Geography	4.00
R-101	Judaism and Foundations of Religion	4.00
R-102	Christianity and Islam	4.00
R-103	Asian Religions	4.00
R-210	World Religions	4.00

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4.00
HST-202	History of the United States	4.00
HST-203	History of the United States	4.00
SOC-225	Social Problems	4.00

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3.00
ART-204	History of Art/Ancient Through Medieval	4.00
ART-205	History of Art/Romanesque Through Baroque	4.00
ART-206	History of Art/Enlightenment Through Contemporary	4.00
ENG-104Z	Introduction to Fiction	4.00
ENG-105Z	Introduction to Drama	4.00
ENG-106Z	Introduction to Poetry	4.00
ENG-107	World Literature: Ancient Through Classical Times	4.00
ENG-108	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-109	World Literature: The 19th through 21st Centuries	4.00
ENG-194	Introduction to Film	4.00
ENG-195	American Film	4.00
ENG-201	Shakespeare	4.00
ENG-202	Shakespeare	4.00
ENG-204	British Literature: Ancient to Enlightenment	4.00
ENG-205	British Literature: Romantic to Contemporary	4.00
ENG-213	U.S. Latinx Literature	4.00
ENG-226	Popular Literature	4.00
ENG-230	Documentary Film	4.00
ENG-241	Norse Mythology	4.00
ENG-250	Greek Mythology	4.00
ENG-251	Celtic Mythology	4.00
ENG-252	Hindu Mythology	4.00
ENG-253	American Literature: Pre-Columbian to Civil War	4.00
ENG-254	American Literature: 1865 to Present	4.00
ENG-255	American Literature: Topics in American Literature	4.00
ENG-260	Introduction to Women Writers	4.00
ENG-270	Introduction to Literary Criticism	4.00
MUS-105	Music Appreciation	3.00
MUS-205	Music Literature: History of Jazz	4.00
MUS-206	Music Literature: History of Rock	4.00

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3.00