

# BIOLOGICAL ENGINEERING EMPHASIS, AS - WITH OREGON STATE UNIVERSITY

Program Code: AS.OSUBIOLENGR

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, Oregon Tech (Oregon Institute of Technology) or George Fox University.

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 technical solutions to an audience through oral, written, and graphical communication.

## Requirements

Course	Title	Credits
<b>First Year</b>		
<b>Fall Term</b>		
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
<b>Credits</b>		<b>16</b>
<b>Winter Term</b>		
BI-204	Elementary Microbiology	4
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
<b>Credits</b>		<b>14</b>
<b>Summer Term</b>		
CH-223	General Chemistry	5
MTH-256	Differential Equations	4

Course	Title	Credits
<b>Social Process Electives (p. 1)</b>		<b>4</b>
<b>Credits</b>		<b>13</b>
<b>Second Year</b>		
<b>Fall Term</b>		
CH-241	Organic Chemistry I	5
ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>14</b>
<b>Winter Term</b>		
CH-242	Organic Chemistry II	5
MTH-253	Calculus III	5
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
CH-243	Organic Chemistry III	5
ENGR-201	Electrical Fundamentals	4
PH-213	General Physics With Calculus	5
<b>Western Culture Electives (p. 1)</b>		<b>4</b>
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>107</b>

## Social Process Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: MICRO	4
EC-202	Principles of Economics: MACRO	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-110	Psychology: An Overview	4
PSY-200	Psychology As A Natural Science	4
PSY-205	Psychology As a Social Science	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4

Code	Title	Credits
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## 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.

## Cultural Diversity Electives

Code	Title	Credits
ANT-231	Native Americans of the Pacific Northwest	4
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latino Literature	4
ENG-252	Hindu Mythology	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4

Code	Title	Credits
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latino Literature	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3