

# ENGINEERING EMPHASIS - ASSOCIATE OF SCIENCE (AS)

## Description

The Engineering Emphasis Associate of Science provides core science, engineering, and general education courses needed for most engineering majors. Students earning an engineering degree choose from among the many branches of engineering available, such as civil, mechanical, electrical, chemical, computer, and energy systems engineering. Some engineering majors and branches may require additional courses not offered at Central Oregon Community College.

## Statewide General Education Student Learning Outcomes

Please see the [General Education page](#) for statewide general education student learning outcomes.

## Entrance Requirements

While this program has no formal entrance requirements, individual courses may have prerequisites which must be met before enrollment.

## Course Requirements

Course	Title	Credits
<b>General Education/Foundational</b>		
<b>Health</b>		
HHP 295	Health and Fitness	3
<b>Mathematics</b>		
MTH 251	Calculus I	4
<b>Oral Communication</b>		
COMM 111	Fundamentals of Public Speaking	4
<b>Writing</b>		
WR 121	Academic Composition	4
WR 227	Technical Writing	4
<b>General Education/Discipline studies</b>		
<u>Arts and Letters:</u>		
Choose two courses from the Discipline Studies list		6-8
<u>Social Science:</u>		
Choose two courses from the Discipline Studies list		6-8
Recommend: EC 201		
<b>Program Requirements</b>		
CH 221	General Chemistry I	5
CH 222	General Chemistry II	5
ENGR 100	Introduction to Engineering I	3
ENGR 102	Introduction to Engineering II	3
ENGR 103	Introduction to Engineering III	3
ENGR 201	Electrical Fundamentals	4
ENGR 202	Electrical Fundamentals II	4
ENGR 211	Statics	4
ENGR 212	Dynamics	4
ENGR 213	Strength Of Material	4
MTH 252	Calculus II	4
MTH 253	Calculus III	4
MTH 254	Vector Calculus I	4

MTH 256	Applied Differential Equations	4
PH 211	General Physics I	5
PH 212	General Physics II	5
PH 213	General Physics III	5
<b>Total Credits</b>		<b>101-105</b>

## Advising Notes

Most engineering majors have few if any true electives, and students must sequence courses intentionally. The elective category should be used to tailor the program to a specific engineering major or branch. General guidelines follow; students are recommended to research requirements directly.

**Chemical:** CH 223 General Chemistry III and MTH 253 Calculus III. Note that Oregon State University requires a year-long sequence before the junior year that COCC does not offer.

**Civil:** ENGR 212 Dynamics

**Energy Systems Engineering:** BA 217 Accounting Fundamentals, CS 161 Computer Science I, EC 201 Microeconomics, ENGR 202 Electrical Fundamentals II, ENGR 212 Dynamics, MTH 253 Calculus III

**Mechanical:** CIS programming class: CIS 122 Introduction to Programming, CIS 133JS Introduction to JavaScript, CIS 133P Introduction to PHP, CS 161 Computer Science I, CS 162 Computer Science II), CIS 125A1 AutoCAD 1, CIS 125A2 AutoCAD 2, ENGR 212 Dynamics, MFG 103 Welding Technology I, MFG 112 Manufacturing Processes II.

## Performance Standards

- Academic Requirements:
  - Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
  - All General Education/Foundational courses must be completed with a C grade or higher.

## Sample Plan

<b>First Year</b>		<b>Credits</b>
<b>Fall</b>		
COMM 111	Fundamentals of Public Speaking	4
ENGR 100	Introduction to Engineering I	3
HHP 295	Health and Fitness	3
MTH 251	Calculus I	4
WR 121	Academic Composition	4
<b>Credits</b>		<b>18</b>
<b>Winter</b>		
CH 221	General Chemistry I	5
ENGR 102	Introduction to Engineering II	3
MTH 252	Calculus II	4
PH 211	General Physics I	5
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ENGR 103	Introduction to Engineering III	3

CH 222	General Chemistry II	5
MTH 253	Calculus III	4
PH 212	General Physics II	5
<b>Credits</b>		<b>17</b>
<b>Second Year</b>		
<b>Fall</b>		
ENGR 211	Statics	4
MTH 256	Applied Differential Equations	4
PH 213	General Physics III	5
WR 227	Technical Writing	4
<b>Credits</b>		<b>17</b>
<b>Winter</b>		
Discipline Studies Social Science (recommend EC 201)		4
ENGR 201	Electrical Fundamentals	4
MTH 254	Vector Calculus I	4
ENGR 212	Dynamics	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Discipline Studies Arts & Letters		3-4
Discipline Studies Arts & Letters		3-4
Discipline Studies Social Science		3-4
ENGR 202	Electrical Fundamentals II	4
ENGR 213	Strength Of Material	4
<b>Credits</b>		<b>17-20</b>
<b>Total Credits</b>		<b>102-105</b>