

MECHANICAL/CIVIL ENGINEERING, ASSOCIATE OF SCIENCE

The Associate of Science (AS) in Mechanical/Civil Engineering program will provide the first two years of the engineering core curriculum for students pursuing civil or mechanical engineering as a transfer degree. The coursework is foundational to the upper division pro-schools and provides the fundamental concepts needed for success and advancement in the civil and mechanical engineering profession.

This degree satisfies the requirements for an AS degree and was designed to transfer to Oregon Institute of Technology's College of Engineering or Oregon State University's College of Engineering. Please consult your advisor for details.

GRADUATION REQUIREMENTS

Students must complete a minimum of 107 credit hours with a cumulative Grade Point Average (GPA) of 2.0 or better. All courses must be completed with a grade of 'C' or better. Twenty-four (24) credits must be completed at Southwestern before the AS degree is awarded.

Courses that are developmental in nature (designed to prepare students for college transfer courses) are not applicable to this degree.

Students must complete the graduation application process one term prior to the term of completion (e.g., spring term graduates must apply during winter term).

PROGRAM STUDENT LEARNING OUTCOMES

- Students will demonstrate the ability to solve engineering problems using a variety of mathematical and computational methods.
- Students will learn and apply the required ethics expected in a professional engineering setting.
- Students will gain fundamental understanding of engineering principles including fundamentals of equilibrium of forces, and moments, an understanding of material responses to applied and reaction loads, and fundamental electrical circuits.
- Students will demonstrate problem solving experience through various methods including use of higher level computer programming 2-D and 3-D CAD modeling.
- Students will demonstrate an ability to think critically and design feasible solutions to proposed design problems.
- Students will be able to communicate designs and results effectively.
- Students will demonstrate an ability to function in interdisciplinary teams.

Math and writing placement are unique to each student and are determined during the admissions and intake advising process. Additional math or writing courses may be required prior to taking the math or writing program requirements in this degree.

PROGRAM GUIDE

Course	Title	Credits
First Year		
Fall		
CHEM221	General Chemistry I	5
MTH251	Calculus I Differential Calculus	4
ENGR111	Intro to Engineering	3
WR121Z	Composition I	4
Credits		16
Winter		
CHEM222	General Chemistry II	5
COMM111Z	Public Speaking	4
MTH252	Calculus II Integral Calculus	4
ENGR112	Engineering Computation	4
Credits		17
Spring		
BI103	General Biology ²	4
MTH253	Calculus III Infinite Sequences And Series ⁶	4
WR227Z	Technical Writing	4
DRFT110	Computer Assisted Drafting I	3
or DRFT112	or Computer Assisted Drafting III	
Arts & Letters ¹		3
Credits		18
Summer		
ECON201	Microeconomics	4
or ECON202	or Macroeconomics	
Arts and Letters ¹		3
Credits		7
Second Year		
Fall		
ENGR211	Statics	3
PH211	General Physics with Calculus I	5
ENGR201	Electrical Fundamentals I ⁵	4
MTH254	Vector Calculus I	4
Credits		16
Winter		
PH212	General Physics with Calculus II	5
ENGR212	Dynamics	3
ENGR202	Electrical Fundamentals II ⁵	4
PE231	Wellness for Life ⁴	3
Cultural Diversity ³		3
Credits		18
Spring		
PH213	General Physics with Calculus III	5
ENGR213	Strength of Materials	3
MTH256	Differential Equations	4
MTH260	Matrix Methods and Linear Algebra ⁶	4
Credits		16
Total Credits		108

- ¹ Select appropriate course in specific subject area from the course listed in AS Arts & Letters category.
- ² BI101, BI102, BI103, BI201, BI202, BI203, BI234, ENV235, F250 may be substituted. Transfer to OIT for Civil Engineering should substitute G201.
- ³ Cultural Diversity: ANTH224, ANTH231, ANTH232, or HST104. Must be a Social Science course.
- ⁴ PE231, HE250, or three (3) credits of PE185 sport/activity courses will satisfy this requirement.
- ⁵ GEOG265 may substitute for ENGR201 for students transferring to OIT Civil Engineering.
- ⁶ MTH264 and MTH243A may be substituted for MTH253 and MTH260. Students transferring to Oregon State in Civil Engineering must take MTH264 and STAT243Z.
- ⁷ OIT and PSU transfers should take MTH255 in place of MTH260 and should take MTH253.
- ⁸ OSU and OIT Civil Students should take Forest Surveying F222A in place of ENGR202.