

# BS in Applied Engineering - Concentration in Sustainability and Environmental Engineering

## Program Requirements

The BS in applied engineering with a concentration in sustainability and environmental engineering requires the completion of 120 credit hours for graduation and includes 32 credit hours of mathematics and natural sciences and 65 credit hours of major courses. All the prerequisite courses must be completed with a minimum grade point average of 2.000.

In addition to meeting the requirements of the WSU General Education Program (<http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/>) and the requirements of the College of Engineering, students in the BS in applied engineering with a concentration in sustainability and environmental engineering must take the following courses:

Course	Title	Hours
<b>General Education (34-35 credit hours)</b>		
Select courses to meet General Education requirements <sup>1</sup>		15-18
General Education courses that will also meet Program Requirements		
FYAP 102A	First-Year Seminar: Introduction to Technology and Innovation <sup>2</sup>	3
ECON 201	Principles of Macroeconomics	3
PHIL 385	Engineering Ethics	3
PHYS 313	Physics for Scientists I	4
PHYS 315	University Physics Lab I	1
MATH 242	Calculus I	5
<b>Required Program Mathematics/Natural Sciences</b>		
GEOL 300	Energy, Resources and Environment <sup>3</sup>	3
BIOL 370	Introductory Environmental Science <sup>3,4</sup>	3
STAT 370 or IME 254	Elementary Statistics <sup>3</sup> Engineering Probability and Statistics I	3
MATH 243	Calculus II <sup>3</sup>	5
MATH 451	Computational Mathematics Using MATLAB <sup>3,5</sup>	3
CHEM 211	General Chemistry I <sup>3</sup>	5
<b>Applied Engineering Core <sup>6</sup></b>		
APEN 312	Applied Statics	3
APEN 334	Introduction to Strength and Mechanics of Materials	3
APEN 354	Statistical Process Control	3
APEN 441	Analysis of Decision Processes in Technology	3
ENGT 492	Energy Management and Sustainability	3
APEN 201	Introductory Design Project	1
APEN 301	Intermediate Design Project	1
APEN 401	Senior Project I	3
APEN 402	Senior Project II	3
IME 222	Engineering Graphics	2
IME 222L	Graphics Lab	1
IME 258	Manufacturing Methods and Materials I	3
IME 258L	Manufacturing Methods and Materials I Lab	1

## Engineering+ Program

Completion of the Engineering+ program <sup>7</sup>

### Required Courses for Sustainability and Environmental Engineering Concentration

APEN 320 or ECE 282	Circuits Technology with Lab Circuits I	4
APEN 323	Introduction to Fluids	3
APEN 370	Environmental Engineering Technology	3
APEN 510 or ECE 596	Solar and Wind Engineering Renewable Energy Engineering	3
APEN 600	Water and Wastewater Treatment	3
APEN 610	Hydraulics and Hydrology	3
APEN 620	Structural Analysis and Design	3
ME 250	Materials Engineering	3
ME 251	Materials Engineering Laboratory	1

### Technical Electives

Select 5-8 credit hours of technical electives preapproved and documented by an applied engineering faculty advisor. Please refer to the applied engineering website or consult with your applied engineering advisor for a current list of technical electives. <sup>1</sup>

### Total Credit Hours

120

- <sup>1</sup> Required major courses may also count towards General Education requirements. Students will need to select additional technical electives to reach 120 credit hours required for graduation with assistance from an advisor.
- <sup>2</sup> All first-year college students must take FYAP 102A within their first two semesters. Transfer students will take ENGR 205 to replace FYAP 102A.
- <sup>3</sup> May count as a general education course.
- <sup>4</sup> With approval from the department chair, students may substitute with any BIOL course.
- <sup>5</sup> With approval from the department chair, students may substitute with any MATH 300 level or above course.
- <sup>6</sup> All applied engineering students must complete these courses, regardless of applied engineering concentration.
- <sup>7</sup> Details outlined under College of Engineering Requirements (<http://catalog.wichita.edu/undergraduate/engineering/#graduationrequirementstext>), #2.

### Applied Learning

Students in applied engineering programs are required to complete an applied learning or research experience to graduate from the programs. The requirement can be met by completing the three-course capstone design experience consisting of APEN 301, APEN 401 and APEN 402.