# Augustana College

# **Engineering-Bachelor of Science-Mechanical and Civil Concentrations**

#### **Courses required for the first year:**

Fall – Engr 190, Math 160 or Math 140, according to placement\*\* Spring - Phys 211, Math 160 if not taken in fall\*\*

#### **Courses recommended for the first year:**

J-Term - Phys 200

Spring - Math 220 (2 credits)

#### **Contact:**

Dr. Joshua M. Dyer, (joshuadyer@augustana.edu)

## **The Major in Engineering- Bachelor of Science**

The engineering program strongly recommends that any student interested in engineering contact an engineering or physics faculty member as soon as possible. For many students, the ENGR 190 professor will be the easiest person to contact. Additional information about each concentration will be provided by the Physics, Engineering, and Astronomy department.

#### **Required Courses**

| Course<br>Number | Course Name                | Learning<br>Perspective/<br>Suffix | Prerequisites | Usually<br>offered:<br>F, J, SP, SU* | Credits |
|------------------|----------------------------|------------------------------------|---------------|--------------------------------------|---------|
| Engr 190         | Intro to Design            |                                    |               | F                                    | 4       |
| Engr 290         | Experimentation and Design |                                    | Phys 200      | SP                                   | 4       |
| Engr 390         | Junior Design              |                                    | Engr 290      | F or SP                              | 4       |
| Engr 490         | Senior Inquiry             |                                    | Engr 390      | F                                    | 2       |
| Engr 491         | Senior Inquiry             |                                    | Engr 490      | SP                                   | 2       |
|                  | Ethics Requirement         | PH                                 |               |                                      |         |

#### **Required Supporting Courses**

| Course<br>Number | Course Name             | Learning<br>Perspective/<br>Suffix | Prerequisites              | Usually<br>offered:<br>F, J, SP, SU* | Credits |
|------------------|-------------------------|------------------------------------|----------------------------|--------------------------------------|---------|
| Phys 200         | Modeling and Simulation |                                    | Math 140                   | F/J                                  | 4       |
| Phys 211         | Foundational Physics I  | PN                                 | Math 160 (or co-requisite) | SP                                   | 4       |

| Phys 212                               | Foundational Physics II  | PN | Phys 211 & Math<br>260<br>(co-requisite) | F                     | 4 |
|--|--|----|--|-----------------------|---|
| Math 160                               | Calculus   |    |  | F/SP                  | 4 |
| Math 220                               | Integration Methods  |    | Math 160                                 | F/SP                  | 2 |
| Math 260                               | Multivariable Calc   |    | Math 220                                 | F                     | 4 |
| Math 320                               | Differential Equations & Linear Systems                                    |    | Math 220                                 | SP                    | 4 |
| Phys 201 or<br>Chem 131 or<br>Phys 213 | Materials Science or<br>General Chemistry I or<br>Foundational Physics III | PN | For PHYS213:<br>Phys 211 & Math<br>260   | F/SP or F/SP or<br>SP | 4 |

#### **Major Overview**

- The BSE in engineering is an ABET-accredited degree in engineering, with possible concentrations in mechanical, environmental engineering, and civil.
- It is among the largest majors on the Augustana campus in terms of credit hours required (78 total), which means it is important that students complete the required courses during their first year. Failure to do this means that students *may* not be able to finish the degree in four years.
- A Study Abroad program of interest to engineers that travels to the Alps and carries PH and PA perspectives is offered in the spring term of odd years (2023, 2025, etc...)
- A minor in Engineering is not offered. However, there is a minor in Physics.
- Students may not double-major in Engineering Physics and Engineering (BSE).

\*Fall, J term, Spring, Summer; see Academic Calendar for specific dates

Updated December 2023

<sup>\*\*</sup>For students not eligible to enroll in MATH 140 Precalculus or higher in their first fall semester at Augustana, the BSE cannot be completed in four years. They are encouraged to consider other options like the BA in Engineering Physics or the BA in Physics.

# Augustana College

# **Engineering-Bachelor of Science-Environmental & Sustainability Concentrations**

Courses required for the first year: Fall – Engr 190, Math 160; Spring - Phys 211

Courses recommended for the first year: J-term - Phys 200; Spring - Math 220

Contact:

Dr. Joshua M. Dyer, (joshuadyer@augustana.edu)

## **The Major in Engineering- Bachelor of Science**

A minor in Engineering is not offered. Students may not also major in Engineering Physics.

### **Required Courses**

| Course<br>Number | Course Name                             | Learning<br>Perspective/<br>Suffix | Prerequisites | Usually<br>offered:<br>F, J, SP, SU | Credits |
|------------------|---|------------------------------------|---------------|-------------------------------------|---------|
| Engr 190         | Intro to Design                         |                                    |               | F                                   | 4       |
| Engr 290         | Experimentation and Design              |                                    | Phys 200      | SP                                  | 4       |
| Engr 390         | Junior Design                           |                                    | Engr 290      | F or SP                             | 4       |
| Engr 490         | Senior Inquiry                          |                                    | Engr 390      | F                                   | 2       |
| Engr 491         | Senior Inquiry                          |                                    | Engr 490      | SP                                  | 2       |
| Engr 340         | Principles of Environmental Engineering |                                    | Phys 211      | F                                   | 4       |
|                  | Ethics Requirement                      | PH                                 |               |                                     |         |

#### **Required Supporting Courses**

| Required Supporting Courses            |  |                                    |  |                                     |         |  |
|--|--|------------------------------------|--|-------------------------------------|---------|--|
| Course<br>Number                       | Course Name  | Learning<br>Perspective/<br>Suffix | Prerequisites                          | Usually<br>offered:<br>F, J, SP, SU | Credits |  |
| Phys 200                               | Modeling and Simulation  |                                    |  | F/J                                 | 4       |  |
| Phys 211                               | Foundational Physics I   | PN                                 | Math 160 (or co-requisite)             | Foundational<br>Physics I           | 4       |  |
| Math 160                               | Calculus   |                                    |  | F/SP                                | 4       |  |
| Math 220                               | Integration Methods  |                                    | Math 160                               | F/SP                                | 2       |  |
| Math 260                               | Multivariable Calc   |                                    | Math 220                               | F                                   | 4       |  |
| Envr 100                               | Ecological Systems   |                                    | Math 160                               | F/J/SP                              | 4       |  |
| Geol 101                               | Physical Geology   |                                    | Math 220                               | F/J/SP/SU                           | 4       |  |
| Phys 201 or<br>Chem 131 or<br>Phys 213 | Materials Science or<br>General Chemistry I or<br>Foundational Physics III | PN                                 | For PHYS213:<br>Phys 211 & Math<br>260 | F/SP or F/SP or<br>SP               | 4       |  |

### **Major Overview**

- -A Study Abroad program of interest to engineers that travels to the Alps and carries PH and PA perspectives is offered in spring term of odd years.
- -We recommend meeting with the engineering advisor ASAP to map out a course plan.

Note: Fall, J term, Spring, Summer; see <u>Academic Calendar</u> for specific dates

Updated November 2023