

# Pre-Engineering (PENG)

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The Pre-Engineering program provides students with the academic foundation needed for transfer to a bachelor's degree program in engineering science, such as electrical, chemical, civil, mechanical, computer, or environmental engineering.

Students earn an Associate of Science degree and are prepared to enter their bachelor's degree program with about half of the required credits already completed.

Students must consult with their academic advisor before choosing electives, to ensure that elective courses meet the requirements of the college or university where they will complete their bachelor's degree.

Students must meet the requirements set by the institution they will transfer to. Completing the Pre-Engineering degree does not guarantee acceptance at another college or university.

For more information, please contact the Engineering and Information Technologies Division at (513) 569-1743.

To apply for this program at Cincinnati State, visit the Admissions (<http://www.cincinnati.edu/academics/admission/>) section of the College website.

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| Semester 1 |                                | Lec | Lat | Credits |
|------------|--------------------------------|-----|-----|---------|
| CHE 121    | General Chemistry 1            | 4   | 0   | 4       |
| CHE 131    | General Chemistry 1 Lab        | 0   | 3   | 1       |
| ENG 101    | English Composition 1          | 3   | 0   | 3       |
| FYE 1XX    | First Year Experience Elective | 1   | 0   | 1       |
| ENGR 111   | Introduction to Engineering 1  | 2   | 2   | 3       |
| Semester 2 |                                |     |     |         |
| PHY 201    | Physics 1: Calculus-Based      | 4   | 2   | 5       |
| MAT 251    | Calculus 1                     | 5   | 0   | 5       |
| ENG 10X    | English Composition Elective   | 3   | 0   | 3       |
| ENGR 112   | Introduction to Engineering 2  | 2   | 2   | 3       |
| Semester 3 |                                |     |     |         |
| MAT 252    | Calculus 2                     | 5   | 0   | 5       |
| COMM 110   | Public Speaking                | 3   | 0   | 3       |
| XXX XXX    | Technical Elective 1           | 2   | 3   | 3       |
| XXX XXX    | Arts/Humanities Elective 1     | 3   | 0   | 3       |

| Semester 4     |                                       |    |    |    |
|----------------|---------------------------------------|----|----|----|
| XXX XXX        | Technical Elective 2                  | 2  | 2  | 3  |
| XXX XXX        | Transfer Module Math/Science Elective | 5  | 0  | 5  |
| XXX XXX        | Social Science Elective               | 3  | 0  | 3  |
| XXX XXX        | Arts/Humanities Elective 2            | 3  | 0  | 3  |
| Semester 5     |                                       |    |    |    |
| XXX XXX        | Technical Elective 3                  | 2  | 3  | 3  |
| XXX XXX        | Technical Elective 4                  | 1  | 40 | 2  |
| HST XXX        | History Elective                      | 3  | 0  | 3  |
| Total Credits: |                                       | 56 | 57 | 64 |

## Electives

### First Year Experience Elective

|         |                              |   |
|---------|------------------------------|---|
| FYE 100 | College Survival Skills      | 1 |
| FYE 105 | College Success Strategies   | 2 |
| FYE 110 | Community College Experience | 3 |

### English Composition Elective

|         |   |   |
|---------|---|---|
| ENG 102 | English Composition 2: Contemporary Issues      | 3 |
| ENG 103 | English Composition 2: Writing about Literature | 3 |
| ENG 104 | English Composition 2: Technical Communication  | 3 |
| ENG 105 | English Composition 2: Business Communication   | 3 |

### Arts/Humanities Elective (select two courses)

|  |   |
|--|---|
| Any Transfer Module course from ART, LIT, MUS, PHI, REL, THE | 6 |
|--|---|

### Transfer Module Math/Science Elective

|                   |   |   |
|-------------------|---|---|
| MAT 253           | Calculus 3                                      | 5 |
| CHE 122 & CHE 132 | General Chemistry 2 and General Chemistry 2 Lab | 5 |
| CHE 201 & CHE 211 | Organic Chemistry 1 and Organic Chemistry 1 Lab | 5 |
| CHE 202 & CHE 212 | Organic Chemistry 2 and Organic Chemistry 2 Lab | 5 |
| PHY 202           | Physics 2: Calculus-Based                       | 5 |

### Technical Electives <sup>1</sup>

|         |                           |   |
|---------|---------------------------|---|
| MAT 253 | Calculus 3                | 5 |
| CET 105 | Introduction to Surveying | 3 |
| MET 111 | Manufacturing Processes 1 | 3 |

|   |   |   |
|---|---|---|
| MET 131   | MET Computer Aided Drafting 1   | 3 |
| MET 140   | Engineering Materials   | 3 |
| EET 121   | Digital Systems 1   | 3 |
| EET 131   | Circuit Analysis 1  | 4 |
| EET 132   | Circuit Analysis 2  | 4 |
| CHE 122<br>& CHE 132  | General Chemistry 2<br>and General Chemistry 2 Lab  | 5 |
| CHE 201<br>& CHE 211  | Organic Chemistry 1<br>and Organic Chemistry 1 Lab  | 5 |
| CHE 202<br>& CHE 212  | Organic Chemistry 2<br>and Organic Chemistry 2 Lab  | 5 |
| PHY 202   | Physics 2: Calculus-Based   | 5 |
| CET 291   | Full-Time Cooperative Education 1: Civil<br>Engineering Technology <sup>2</sup>               | 2 |
| MET 291   | Full-Time Cooperative Education 1: Mechanical<br>Engineering Technology <sup>2</sup>          | 2 |
| EET 291   | Full-Time Cooperative Education 1: Electronics<br>Engineering Technology <sup>2</sup>         | 2 |
| EMET 291  | Full-Time Cooperative Education 1: Electro-<br>Mechanical Engineering Technology <sup>2</sup> | 2 |
| ENGR 200  | Engineering Statics (Calculus Based)  | 3 |
| <b>Social Science Elective (select one course)</b>              |   |   |
| Any Transfer Module course from ECO, GEO, LBR, POL, PSY,<br>SOC |   | 3 |
| <b>History Elective (select one course)</b>                     |   |   |
| Any Transfer Module course from HST                             |   | 3 |

<sup>1</sup> Program Chair consent required for Technical Electives. Not all courses are offered every semester. Since Technical Electives vary by transfer school and discipline, students must meet with a Pre-Engineering advisor before registering for courses.

<sup>2</sup> Only one full-time co-op course is permitted. Co-op credits may not transfer to bachelor's degree programs.

Some courses are offered in alternative versions identified with a letter after the course number-- for example, ENG 101 and ENG 101A.

- This curriculum displays only course numbers without the added letter.
- The alternative version, when available, meets the requirements of the course version without the added letter.

## Pre-Engineering (PENG)

- Ability to apply knowledge of mathematics, science, and engineering.
- Ability to design and conduct experiments, as well as to analyze and interpret data.
- Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Ability to function on multidisciplinary teams.
- Ability to identify, formulate, and solve engineering problems.
- Understanding of professional and ethical responsibilities.
- Ability to communicate effectively.
- Understanding of the impact of engineering solutions in a global, economic, environmental, and societal context.

- Recognition of the need for and ability to engage in life-long learning.
- Knowledge of contemporary issues.
- Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## Faculty

### Program Chair/Advisor

George Armstrong, PE, PS, BS  
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### Advisors

Wendy Steinberg, MS  
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