1. University Requirements (23-24)
   - Writing, Rhetoric and American Cultures (WRA) 4
   - Integrative Studies in Humanities (IAH) 8
   - Integrative Studies in Social Sciences (ISS) 8
   - Bioscience (one of the following): BS 110, BS 111, ENT 205, MMG 201, MMG 301, PLB 105, PSL 250, ZOL 141 3-4

2. College Requirements: (28)
   - CEM 141 General Chemistry 4
   - EGR 100 Introduction to Engineering Design 2
   - MTH 132 Calculus I 3
   - MTH 133 Calculus II 4
   - MTH 234 Multivariable Calculus 4
   - MTH 235 Differential Equations 3
   - PHY 183 Physics for Scientists & Engineers I 4
   - PHY 184 Physics for Scientists & Engineers II 4

3. Major Requirements: (41)
   A. Complete one of the following courses: (1)
      - CEM 161 Chemistry Laboratory I 1
      - PHY 191 Physics Laboratory for Scientists I 1
   B. All of the following courses: (40)
      - CSE 231 Introduction to Programming I 4
      - CSE 232 Introduction to Programming II 4
      - CSE 260 Discrete Structures in Computer Sci 4
      - CSE 331 Algorithms and Data Structures 3
      - CSE 410 Operating Systems 3
      - ECE 201 Circuits and Systems I 3
      - ECE 202 Circuits and Systems II 3
      - ECE 203 Circuits and Systems Laboratory 1
      - ECE 230 Digital Logic Fundamentals 3
      - ECE 280 Electrical Engineering Analysis 3
      - ECE 302 Electronic Circuits 3
      - ECE 303 Electronics Laboratory 1
      - ECE 331 Microprocessors & Digital Systems 4
      - ECE 390 Ethics, Professnlm and Cont. Issues 1
      - ECE 480 Senior Design 4

C. Major Electives: (24)
   - Complete 24 credits of electives as specified below. At least 18 credits must be from core and focus track electives combined.
   - Additional credits to meet the 24 credit requirement may be taken from other courses listed below, any 400-level Computer Science and Engineering (CSE) or Electrical and Computer Engineering (ECE) courses, or by completing an experiential education substitution.

Core Electives: (6)
   - At least 6 credits from the following:
     - ECE 410 VSI Design (L) 4
     - CSE 420 Computer Architecture 3
     - *CSE 422 Computer Networks
     - OR
     - *ECE 442 Intro to Communication Networks 3

Focus Track Electives: (12)
   - At least 12 credits from the following:
     - Hardware
       - ECE 402 Appl of Analog Integrated Circuits (L) 4
       - ECE 411 Electronic Design Automation (L) 4
       - ECE 412 Mixed-Signal Integrated Circuits (L) 4
     - Software
       - ECE 366 Introduction to Signal Processing 3
       - CSE 335 Object-oriented Software Design 3
       - CSE 450 Translation of Programming Languages 3
       - CSE 471 Media Processing & Multimedia Computing 3

Recommended Electives: (6)
   - At least 6 additional credits from above Core or Focus areas or from the following courses:
     - ECE 305 Electromagnetic Fields & Waves I 4
     - ECE 313 Control Systems 3
     - ECE 404 Radio Frequency Electronic Circuits 4
     - ECE 415 Computer Aided Manufacturing 3
     - ECE 416 Digital Control 3
     - ECE 457 Communication Systems 3
     - ECE 458 Communication Systems Laboratory 1
     - ECE 466 Digital Signal Processing &Filter Desn 3
     - ECE 474 Principles of Electronics Devices 3

Experiential Education Substitution
   - Students may use registered “out of classroom” experiences to waive one 400-level requirement outside of the major elective requirement. This is a combination of 3 or more experiences documented by pre-approved EGR/ECE credits (EGR 393, ECE 490/499).

Other Electives (Variable)

Total Credits Required for Degree 128

The requirements listed above apply to students admitted to the major of Computer Engineering beginning Fall, 2008. The Department of Electrical and Computer Engineering (ECE) constantly reviews program requirements and reserves the right to make changes as necessary. Students are encouraged to consult with their advisor to obtain assistance in planning an appropriate schedule. Students who have questions about Computer Engineering should contact the Electrical and Computer Engineering Department Advising Office, 2212 Engineering Building, phone (517) 355-5242.
## Computer Engineering
### Sample Program

### Freshman Year

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
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<tr>
<td>WRA 1XX or ISS 2XX</td>
<td>4</td>
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<tr>
<td>Bioscience (AT)</td>
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<tr>
<td>CEM 141</td>
<td>4</td>
</tr>
<tr>
<td>EGR 100</td>
<td>2</td>
</tr>
<tr>
<td>MTH 132</td>
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### Sophomore Year

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<td>ECE 201</td>
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<tr>
<td>MTH 234</td>
<td>4</td>
</tr>
<tr>
<td>PHY 184</td>
<td>4</td>
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<tr>
<td>PHY 191 or CEM 161</td>
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### Junior Year

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<td>ECE 302/303</td>
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<td>ECE 331</td>
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<td>IAH 20X</td>
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<td>I</td>
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### Senior Year

<table>
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<tr>
<td>IAH 2XX</td>
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<tr>
<td>Major Elective</td>
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<tr>
<td>Major Elective</td>
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<tr>
<td>ECE 390</td>
<td>1</td>
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<td>Total</td>
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</tbody>
</table>

### Total Credits

- Freshman Year: 16/17
- Sophomore Year: 16
- Junior Year: 15/16
- Senior Year: 15

### Program Objectives

The computer engineering program provides its graduates with a solid foundation on which they can build successful and sustainable careers. Within the first several years following graduation, graduates of the computer engineering program will:

1. **have accrued an understanding of the discipline**, built on an exposure to a broad range of computer engineering topics including the latest and emerging techniques and technologies.

2. **have established expertise within the discipline** originating with in-depth study in selected curricular areas emphasizing the solution to engineering problems using proper tools, practical approaches, and creative problem solving.

3. **be engaged in lifelong learning** in computer engineering, based on a strong foundation in the core sciences and mathematics.

4. **have an appreciation for the global and societal impact of the discipline** through an exposure to contemporary issues, and a knowledge and respect for ethical standards and professional responsibilities.

5. **have successfully utilized essential professional skills** such as teamwork and communications, both oral and written, within the context of engineering problem solving and design.