## Computer Engineering

Accredited by the Engineering Accreditation Commission of ABET, www.abet.org

### 1. University Requirements: (23-24)
- Writing, Rhetoric and American Cultures (WRA) 4
- Integrative Studies in Humanities (IAH) 8
- IAH 201-210 and IAH 211 or >
- Integrative Studies in Social Sciences (ISS) 8
- ISS 2XX and ISS 3XX

Bioscience (one of the following):
- BS 161, ENT 205, MMG 141, MMG 201, PLB 105, PSL 250 3-4

*College Admission Requirement *

### 2. College Requirements: (32)
- *CEM 141 General Chemistry 4
- *CSE 231 Introduction to Programming I 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

1. Core: (6)
   At least 6 credits from the following:
   - CSE 420 Computer Architecture 3
   - CSE 422 Computer Networks 3
   - or
   - ECE 410 VLSI Design (L) 4
   *Both CSE 422 and ECE 442 may not be used to fulfill this requirement

2. At least 3 credits from the following: (3)
   - ECE 305 Electromagnetic Fields and Waves I 4
   - ECE 313 Control Systems 3
   - ECE 366 Introduction to Signal Processing 3

**Focus Track: (9)**
At least 9 credits from the following:

**Hardware**
- ECE 402 App of Analog Integrated Circuits (L) 4
- ECE 411 Electronic Design Automation (L) 4
- ECE 412 Intro to Mixed-Signal Circuits Design (L) 4
- ECE 445 Biomedical Instrumentation 3

**Software**
- CSE 335 Object-oriented Software Design 4
- CSE 450 Translation of Programming Languages 3
- CSE 471 Media Processing & Multimedia Computing 3
- ECE 366 Introduction to Signal Processing 3

**Recommended Electives:**
- 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 456 Intro to Communication & Network Security 3
- ECE 457 Communication Systems 3
- ECE 458 Communication Systems Laboratory 1
- ECE 466 Digital Signal Processing & Filter Design 3
- ECE 474 Principles of Electronics Devices 3

**Other Electives (Variable)**

Total Credits Required for Degree 128

Last revised May 2017
**Biomedical Engineering Concentration: (15)**
The department offers a concentration for students who plan to pursue graduate work in biomedical areas or seek employment in selected medical-related areas. The concentration is available to, but not required of, any student enrolled in the Bachelor of Science degree program in Computer Engineering. Courses completed to satisfy requirement 3. above may also be used to satisfy the requirements of the concentration. The concentration will be noted on the student's transcript.

To earn a Bachelor of Science degree in Computer Engineering with a biomedical engineering concentration, students must complete requirements 1., 2., and 3. above and the following:

1. **Complete 6 credits from the following courses:**
   - ANTR 350 Human Gross Anatomy for Pre-Health Professionals 3
   - BS 161 Cell and Molecular Biology 3
   - PSL 250 Introductory Physiology 4
   - PSL 310 Physiology for Pre-Health Professionals 4

2. **Complete 6 credits from the following courses:**
   - ECE 445 Biomedical Instrumentation 3
   - ECE 446 Biomedical Signal Processing 3
   - ECE 447 Introduction to Biomedical Imaging 3
   - ECE 448 Modeling and Analysis of Bioelectrical Systems 3
   - ECE 449 Fundamentals of Acoustics 3

3. **Complete 3 credits from the following courses:**
   - BE 444 Biosensors for Medical Diagnostics 3
   - ME 494 Biofluid Mechanics and Heat Transfer 3
   - ME 495 Tissue Mechanics 3
   - MSE 425 Biomaterials and Biocompatibility 3
   - A 400-level listed above or other approved Electrical and Computer Engineering (ECE) courses with biomedical engineering content as approved by the student's advisor. The course used to fulfill this requirement may not be used to fulfill concentration requirement 1. or 2.

The requirements listed apply to students admitted to the major of Computer Engineering beginning Fall, 2017. 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

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Last Revised June 2017

Program Educational Objectives

The bachelor's degree in electrical/computer engineering provides its graduates with a solid foundation on which they can build successful and sustainable careers in the ever-changing global work environment. The program prepares its graduates for a variety of career paths including engineering positions directly after program completion, entry to engineering graduate school, and entry to other professional graduate-level schools, and eventual leadership in technical, organizational, and entrepreneurial arenas.

Specifically, the electrical/computer engineering program prepares its graduates to become successful in:

- maintaining and increasing their technical and/or broad expertise through lifelong learning;
- using/applying their continual improving expertise in the practice of electrical/computer engineering or a related career; and
- sharing their expertise to the benefit of the larger community.

Last revised April 2011