

# Computer Engineering

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## 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 161, BS 162, 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: (69)

### 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: (44)

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	Electronic Circuits and Systems Lab	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, Professionalism and Cont. Issues	1
ECE 480	Senior Design (W)	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 approved 3 or 4 credit experiential, out-of-classroom education experience obtained through engineering cooperative education or independent study.

### Core Electives: (6)

#### At least 6 credits from the following:

CSE 420	Computer Architecture	3
CSE 422	Computer Networks	3
ECE 410	VLSI Design (L)	4

### 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	Intro to Mixed-Signal Circuits Design (L)	4

#### Software

CSE 335	Object-oriented Software Design	3
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 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**

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

<b>Freshman Year</b>				<b>Sophomore Year</b>			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
WRA 1XX or ISS 2XX	4	WRA 1XX or ISS 2XX	4	CSE 232	4	CSE 260	4
Bioscience (AT)	3/4	CSE 231	4	ECE 201	3	ECE 202/203	4
CEM 141	4	MTH 133	4	MTH 234	4	ECE 230	3
EGR 100	2	PHY 183	4	PHY 184	4	ECE 280	3
MTH 132	3			PHY 191 or CEM 161	1	MTH 235	3
<b>Total</b>	<b>16/17</b>	<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>	<b>Total</b>	<b>17</b>
<b>Junior Year</b>				<b>Senior Year</b>			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
ECE 302/303	4	CSE 410	3	Core Elect	3/4	ECE 480	4
ECE 331	4	CSE 331	3	IAH 211 or higher	4	Elective	3/4
IAH 201-210	4	ISS 3XX	4	Elective	4	Major Elective	3/4
Major Elective	3/4	Core Elect	3/4	Major Elective	3/4	Major Elective	0/6
		Major Elect	3/4	ECE 390	1		
<b>Total</b>	<b>15/16</b>	<b>Total</b>	<b>16/18</b>	<b>Total</b>	<b>15/17</b>	<b>Total</b>	<b>10/18</b>

### Program 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.