Michigan State University | College of Engineering | Engineering Undergraduate Studies
1410 Engineering Building, East Lansing, MI 48824-1226 | (517) 355-6616 ext. 1
http://www.egr.msu.edu/undergraduate/academics/programs

Computer Engineering

**Accredited by the Engineering Accreditation Commission of ABET,
111 Market Place, Suite 1050, Baltimore, MD 21202-4012 – telephone (410) 347-7700.**

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, Professnlsm and Cont. Issues	1
ECE 480	Senior Design	4

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.

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

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Computer Engineering
Sample Program

Freshman Year

Fall	Credits	Spring	Credits
WRA 1XX or ISS 2XX	4	WRA 1XX or ISS 2XX	4
Bioscience (AT)	3/4	CSE 231	4
CEM 141	4	MTH 133	4
EGR 100	2	PHY 183	4
MTH 132	3	Elective	2
Total	**16/17**	**Total**	**18**

Sophomore Year

Fall	Credits	Spring	Credits
CSE 232	4	CSE 260	4
ECE 201	3	ECE 202/203	4
MTH 234	4	ECE 230	3
PHY 184	4	ECE 280	3
PHY 191 or CEM 161	1	MTH 235	3
Total	**16**	**Total**	**17**

Junior Year

Fall	Credits	Spring	Credits
ECE 302/303	4	CSE 410	4
ECE 331	4	CSE 331	3
IAH 20X	4	ISS 3XX	4
Major Elective I	3/4	Core Elect	3/4
		Major Elect	3/4
Total	**15/16**	**Total**	**17/19**

Senior Year

Fall	Credits	Spring	Credits
Core Elect	3/4	ECE 480	4
IAH 2XX	4	Elective	3
Major Elective	3/4	Major Elective	4
Major Elective	4	Major Elective	4
ECE 390	1		
Total	**16/17**	**Total**	**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.

Last revised May 2007