Michigan State University | College of Engineering | Engineering Undergraduate Studies
Engineering Building, 428 S. Shaw Lane, Room 1415, East Lansing MI 48824 | (517) 355-6616
http://www.egr.msu.edu/undergraduate/academic/degree-programs

Computer Science

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

1. University Requirements: (20)

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 (See 3A Below)	

2. College Requirements: (25)

*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
*PHY 183	Physics for Scientists & Engineers I	4
PHY 184	Physics for Scientists & Engineers II	4

**College Admission Requirement*

3. Major Requirements: (62-64)

a. Bioscience: (4-6)

Select one course from Group 1 and one course from Group 2.

Group 1

**BS 161	Cell and Molecular Biology	3
ENT 205	Pests, Society & Environment	3
IBIO 150	Integrating Biology: From DNA to Populations	3
MMG 141	Introductory Human Genetics	3
MMG 201	Fundamentals of Microbiology	3
PLB 105	Plant Biology	3
PSL 250	Introductory Physiology	4

Group 2

BS 171	Cell and Molecular Biology Laboratory	2
**CEM 161	Chemistry Laboratory I	1
CEM 162	Chemistry Laboratory II	1
PHY 191	Physics Laboratory for Scientists I	1
PHY 192	Physics Laboratory for Scientists II	1
PLB 106	Plant Biology Laboratory	1

b. Complete all of the following: (28)

CSE 232	Introduction to Programming II	4
CSE 260	Discrete Structures in Computer Science	4
CSE 320	Computer Organization and Architecture	3
CSE 331	Algorithms and Data Structures	3
CSE 335	Object-Oriented Software Design	4
CSE 410	Operating Systems	3
CSE 498	Collaborative Design (W)	4
STT 351	Probability and Statistics for Engineering	3

***These courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.*

c. Select five of the following courses: (15)

CSE 402	Biometrics and Pattern Recognition	3
CSE 415	Parallel Programming	3
CSE 420	Computer Architecture	3
CSE 422	Computer Networks	3
CSE 425	Introduction to Computer Security	3
CSE 431	Algorithm Engineering	3
CSE 435	Software Engineering	3
CSE 440	Introduction to Artificial Intelligence	3
CSE 450	Translation of Programming Languages	3
CSE 460	Computability & Formal Language Theory	3
CSE 471	Media Processing & Multimedia Computing	3
CSE 472	Computer Graphics	3
CSE 476	Mobile Application Development	3
CSE 477	Web Application Architecture & Development	3
CSE 480	Database Systems	3
CSE 482	Big Data Analysis	3
CSE 484	Information Retrieval	3
CSE 491	Selected Topics in Computer Science	1-4
MTH 451	Numerical Analysis I	3

Required Cognate: (15)

Cognates in the following areas are available to students in Computer Science: business, communication arts and sciences, foreign language, mathematics, the natural sciences, philosophy, psychology, the social sciences, and telecommunication. Students may complete cognates in other areas with the approval of the Department of Computer Science and Engineering academic adviser. The cognate should enhance the student's ability to apply analytical procedures in a specific subject area

The cognate is selected from (1), (2) or (3) below. The academic advisor of the Department of Computer Science and Engineering must pre-approve both the cognate and the cognate courses.

Cognate 1

A minimum of four courses totaling 15 or more credits outside the College of Engineering. At least 6 of the 15 credits must be in courses at the 300-400 level.

Cognate 2

Cognate in The Eli Broad College of Business consisting of this specific set of courses: ACC 230, (EC 201 or EC 202), FI 320, GBL 323 and MKT 327.

Cognate 3

A sequence of at least four courses in a foreign language.

Other Electives (Variable)

Total Credits Required for Degree 120

The requirements listed above apply to students admitted to the major of Computer Science in the Department of Computer Science and Engineering beginning Fall 2018. The Department of Computer Science and Engineering (CSE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Computer Science should contact the Computer Science and Engineering Department Advising Office, 3201 Engineering Building, phone (517) 353-5455.

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Sample Program

Freshman Year

Fall	Credits	Spring	Credits
Elect/Cognate	4	CSE 231	4
EGR 100	2	Elect/Cog	3
MTH 132	3	MTH 133	4
ISS 2XX	4	WRA 101	4
Total	**13**	**Total**	**15**

Sophomore Year

Fall	Credits	Spring	Credits
CSE 232	4	CSE 335	4
CSE 260	4	CSE 320	3
PHY 183	4	MTH 234	4
IAH 201-210	4	PHY 184	4
Total	**16**	**Total**	**15**

Junior Year

Fall	Credits	Spring	Credits
CSE 331	3	Biosci/Lab	4
CSE 410	3	Elect/Cog	3
STT 351	3	CSE 4XX	3
Elect/Cognate	3	CSE 4XX	3
IAH 211 or >	4	ISS 3XX	4
Total	**16**	**Total**	**17**

Senior Year

Fall	Credits	Spring	Credits
Elect/Cog	3	Elect/Cog	3
Elect/Cog	3	Elect/Cog	3
Elect/Cog	3	CSE 4XX	3
CSE 4XX	3	CSE 498	4
CSE 4XX	3		
Total	**15**	**Total**	**13**

Program Educational Objectives

A graduate of the MSU Computer Science Program is prepared to be

- successful in a computing-related profession, or
- successful in graduate study.

To achieve these objectives the department prepares students in the application of fundamental computing principles and software development skills. This preparation includes the design and implementation of systems that solve complex problems. Our graduates will be trained in teamwork, effective communication, professionalism, ethics, and the engagement of learning and applying new ideas and technologies as the field evolves.

Last revised April 2014