

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 |
| Integrative Studies in Social Sciences (ISS) | 8 |
| 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 |

3. Major Requirements (67-69)

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: (33)

| | | |
|---------|--|---|
| CSE 100 | Computer Science as a Profession | 1 |
| CSE 231 | Introduction to Programming I | 4 |
| 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)

| | | |
|--|--|-----|
| An additional five courses selected from the following (15 credits): | | |
| CSE 420 | Computer Architecture | 3 |
| CSE 422 | Computer Networks | 3 |
| CSE 425 | Introduction to Computer Security | 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 473 | Fundamentals of 3D Game Development | 3 |
| CSE 476 | Mobile Application Development | 3 |
| CSE 477 | Web Application Architecture & Development | 3 |
| CSE 480 | Database Systems | 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 adviser 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 Spring 2015. 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.

Last revised May 2016

Sample Program

| Freshman Year | | | | Sophomore Year | | | |
|----------------------|----------------|---------------|----------------|-----------------------|----------------|---------------|----------------|
| Fall | Credits | Spring | Credits | Fall | Credits | Spring | Credits |
| CSE 100 | 1 | CSE 231 | 4 | CSE 232 | 4 | CSE 320 | 3 |
| EGR 100 | 2 | Elect/Cog | 3 | CSE 260 | 4 | CSE 335 | 4 |
| Elect/Cognate | 3 | MTH 133 | 4 | IAH 201-210 | 4 | MTH 234 | 4 |
| ISS 2XX | 4 | WRA 1XX | 4 | PHY 183 | 4 | PHY 184 | 4 |
| MTH 132 | 3 | | | | | | |
| <hr/> | | <hr/> | | <hr/> | | <hr/> | |
| Total | 13 | Total | 15 | Total | 16 | Total | 15 |

| Junior Year | | | | Senior Year | | | |
|--------------------|----------------|---------------|----------------|--------------------|----------------|---------------|----------------|
| Fall | Credits | Spring | Credits | Fall | Credits | Spring | Credits |
| CSE 331 | 3 | Biosci/Lab | 4 | CSE 4XX | 3 | CSE 4XX | 3 |
| CSE 410 | 3 | Elect/Cog | 3 | CSE 4XX | 3 | CSE 498 | 4 |
| IAH 211 or higher | 4 | CSE 4XX | 3 | Elect/Cog | 3 | Elect/Cog | 3 |
| Elect/Cognate | 3 | CSE 4XX | 3 | Elect/Cog | 3 | Elect/Cog | 3 |
| STT 351 | 3 | ISS 3XX | 4 | Elect/Cog | 3 | | |
| <hr/> | | <hr/> | | <hr/> | | <hr/> | |
| Total | 16 | Total | 17 | Total | 15 | Total | 13 |

Program 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.