

†**Science Requirements** **15-18 hours**
Twelve total credits of coursework from two of the following departments: Biology, Chemistry, Geology or Physics. These courses must be intended for majors in their respective disciplines. The courses must include one of the following options:

Option I:
 *CHEM121/122 General Chemistry I with lab (4 hrs)
One course from the following:
 CHEM123/124 General Chemistry II with lab (4 hrs)
 CHEM125/126 Honors General Chemistry II with lab (4 hrs)

Option II:
 ESSC110 The Dynamic Earth System (4 hrs)
 ESSC111 The Earth System Through Time (4 hrs)

Option III:
 *PHY223 Mechanics and Sound (5 hrs)
 PHY224 Electricity and Light (5 hrs)

Option IV:
 *BIOL110 Introductory Biology I (5 hrs)
 BIOL120 Introductory Biology II (5 hrs)

An additional course from the Biology, Chemistry, Physics or Psychology department. This course *need not* be intended for majors in that discipline (3-5 hrs)

Minor Requirements **0 hours**
No minor is required.

University Elective Courses **10-14 hours**

Program Total **124 hours**

Note:
 *This course satisfies both a general education and a major requirement.
 †Students should take care to satisfy the criteria of general education requirement II in selecting their science courses. Generally, this will require that the selected courses are from three distinct departments.

APPLIED COMPUTER SCIENCE MAJOR (CSCA)

Successful completion of this major satisfies one of the requirements for graduation with a bachelor of science or bachelor of arts degree with a major in computer science. Graduates will be able to pursue advanced graduate degrees. The applied computer science major offers a mix of practice and theory that prepares students for career employment in computer science fields such as systems programming and analysis, software development and maintenance, as well as applications programming.

General Education Requirements **45 hours**

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. MATH120 Calculus I (4 hrs)
5. COSC111 Introduction to Programming*

Area II Science and Technology

1. See page 24
2. See page 24
3. See page 24

Area III Social Sciences

1. See page 24
2. See page 24
3. See page 24
4. See page 24

Area IV Arts and Humanities

1. See page 25
2. See page 25
3. See page 25
4. See page 25

Additional Requirements **7 hours**
 MATH205 Mathematical Structures for Computer Science (4 hrs)
 MATH360 Statistical Methods (3 hrs)

Physical Education/Graduation Requirement **2 hours**

Major Requirements **36 hours**
Required Courses **24 hours**

- *COSC111 Introduction to Programming (3 hrs)
- COSC211 Programming Data Structures (3 hrs)
- COSC221 Computer Organization I (3 hrs)
- COSC231 Exploration in Internet-based Computing (3 hrs)
- COSC311 Algorithms and Data Structures (3 hrs)
- COSC314 Computational Discrete Structures (3 hrs)
- COSC341 Programming Languages (3 hrs)
- COSC481 Software Engineering and Senior Project (3 hrs)

Restricted Elective Courses **12 hours**

Four courses from the following:

- COSC315 Symbolic Computing (3 hrs)
- COSC321 Computer Organization II (3 hrs)
- COSC405 Switching Theory (3 hrs)
- COSC421 Systems Programming (3 hrs)
- COSC422 Introduction to Microprocessors (3 hrs)
- COSC423 Computer Operating Systems (3 hrs)
- COSC436 Web Programming (3 hrs)
- COSC439 Computing Network Principles (3 hrs)
- COSC444 Foundations of Automata and Languages (3 hrs)
- COSC445 Compiler Construction (3 hrs)
- COSC456 Microcomputer Graphics (3 hrs)
- COSC461 Heuristic Programming (3 hrs)
- COSC471 Database Principles (3 hrs)

Minor Requirements **20 hours**

University Elective Courses **14 hours**

Program Total **124 hours**

Note:
 *This course satisfies both a general education and a major requirement.

COMPUTER SCIENCE EDUCATION MAJOR (CSCT)

Secondary Teacher Certification

Successful completion of this program, in conjunction with other teacher education requirements, qualifies students for recommendation for the Michigan Department of Education Secondary Provisional Certificate endorsed in computer science, certification code NR, and, an additional endorsement depending on the minor selected. The Michigan Test for Teacher Certification (MTTC) covering this field is #50, "Computer Science."

Students must be accepted into the College of Education before enrolling in COSC342 Programming Languages for Educators, COSC303 Applications in Computer Science and COSC306 Methods of Teaching Computer Science in the Secondary Schools.

General Education Requirements **44 hours**

Area I Symbolics and Communication

1. See page 23
2. See page 23
3. See page 23
4. See page 23
5. COSC101 Computer Science Concepts and Practical Applications*