**COMPUTER SCIENCE**

*Mathematics/Computer Science Department*

**Faculty**
Robert Franks, Stephen Fyfe, Mark Johnson

**Statement of philosophy**
Are you interested in becoming an app developer, software engineer or web developer? Central College offers a broad range of computer science courses where students gain experience working with programming languages such as Python, Java, C++ and PHP, to become application developers, networking administrators, system analysts, web programmers and software engineers.

No previous computing experience is required before beginning the computer science program. The major is designed to be flexible, facilitating study abroad, internships, and second majors, or minors. Introductory courses in Python and Java lay the foundation for a software design course in the second year. After taking these courses, students are prepared for a variety of upper-level courses and electives. The senior year culminates in a senior project of the student's choice.

**Major Communication Skills**
Students majoring in computer science will develop their ability to speak, listen, read, and write technical material throughout the major curriculum. If a student’s progress is insufficient, additional coursework in writing or speaking may be recommended by the academic advisor. Final development and evaluation of communication skills will occur in the capstone senior project course, COSC-420.

**Major/minor restrictions**
Students who declare computer science as their major may not declare an information systems major with an emphasis in computer information systems. Students seeking a teaching endorsement should consult the education department.

**Computer Science Major Requirements (42 credits)**

1. Complete *one* of the following:
   - COSC 110 Introduction to Computer Science (3)
   - COSC 115 Scientific Programming (3)

2. Complete *all* of the following:
   - COSC 130 Data Structures (3)
   - COSC 220 Software Design (4)
   - COSC 235 Discrete Structures (3)
   - COSC 245 Computer Organization and Architecture (4)
   - COSC 330 Algorithms (3)
   - COSC 420 Senior Project (4)
   - MATH 131 Calculus I (4)
   - 3 additional credits of MATH courses from MATH 105 or other MATH courses at the 132-level or above, excluding MATH 396/397

3. Complete *11 credits* of elective COSC courses at the 200-level or higher, excluding internships and practicum.

**Computer Science Minor Requirements (24 credits)**

1. Complete *one* of the following:
   - COSC 110 Introduction to Computer Science (3)
   - COSC 115 Scientific Programming (3)

2. Complete *all* of the following:
   - COSC 130 Data Structures (3)
   - COSC 220 Software Design (4)
   - COSC 235 Discrete Structures (3)
   - COSC 330 Algorithms (3)

3. Complete *8 credits* of additional COSC courses numbered above 120, excluding COSC 396 and 397.
Computational Science Minor Requirements (29 credits minimum)

1. Complete all of the following:
   - COSC 115 Scientific Programming (3)
   - COSC 130 Data Structures (3)
   - MATH 131 Calculus I (4)
   - MATH 132 Calculus II (4)
   - NASC 315 Computational Science Methods (4)

2. Complete one of the following introductory science sequences:
   - PHYS 111 and 112 General Physics I and II (10)
   - CHEM 131 and 235 General Chemistry and Organic Chemistry I (8)
   - BIOL 130 and 131 Introduction to Cells and Diversity of Life (8)

3. Complete one of the following elective courses:
   - COSC 330 Algorithms (3)
   - MATH 240 Linear Algebra (4)
   - MATH 250 Differential Equations (3)
   - MATH 330 Mathematical Modeling (3)
   - MATH 370 Numerical Analysis (3)