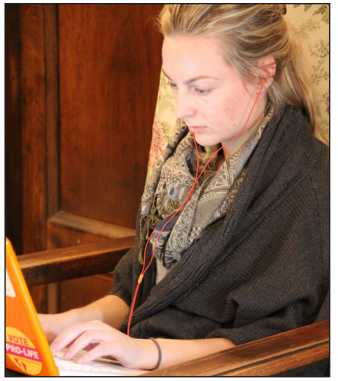
# PROGRAM IN COMPUTER SCIENCE



## FACULTY

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## PROGRAM DESCRIPTION

Courses in computer science are designed to educate students of the liberal arts in computer literacy; to provide computer programming instruction for students of mathematics, science, business and social science; and to establish a solid foundation in computer software theory and practice for students of all disciplines. The courses are taught by the Mathematics Department. The College offers a major in Computing and Applied Mathematics that combines mathematics and computer science (see Mathematics), a concentration in Management Information Systems within the Business Administration major (see Business Administration and Economics), and a minor outlined below.

### *Minor in Computer Science—CPSC (15–16 hours)*

**All of the following:**

| | | |
|---|---|---|
| CPSC 207 | Computer Programming | 3 hours |

**Four of the following:**

| | | |
|---|---|---|
| CPSC 307 | C and Assembly Language Programming | 3 hours |
| CPSC 308 | Electronic Communications | 3 hours |
| CPSC 315 | Simulation: Theory and Application | 3 hours |
| CPSC 328 | Data Structures | 3 hours |
| CPSC 417 | Systems Analysis and Design | 4 hours |
| CPSC 429 | Database Systems | 3 hours |

## COMPUTER SCIENCE COURSES (CPSC)

### 102 Spreadsheets (1)

This course introduces the student to an integrated spreadsheet application. Topics covered include: cell formulas and built-in functions, formatting, charting, templates, "what-if" analysis, pivot tables, macros and integration of spreadsheet data into a word processor. Graded S/U.

### 103 Introduction to Computing (2)

This course includes a brief history of computing, uses of computers in networking and programming, and ethical issues in computing. Students learn to use a database application as they create and manipulate tables, forms, queries, reports, macros and other database objects.

### 207 Computer Programming (3)

This course explores program development and design with objects; the designs are implemented in a commonly used, current programming language. The emphasis is on designing, writing, and correcting programs. Topics include the internal organization of the computer, procedures and functions, elementary data structures, and techniques of problem solving. No previous experience with computers is required. The course is focused around a weekly two-hour laboratory and provides in-depth programming experience.

### 307 C and Assembly Language Programming (3)

This course is designed to deepen a student's understanding of how a computer works by studying the C programming language and how it interfaces with assembly language. A weekly laboratory provides experience in controlling the behavior of the computer in ways not possible in higher level languages. Topics include computer organization, assemblers, loaders, link editors, and memory management. Prerequisite: CPSC 207 or equivalent.

### 308 Electronic Communications (3)

This introduction to data communications examines the fundamentals of network architecture including layers, protocols, client/server model, file transfers, and other low-level communications issues. Students will experience hands-on internet related programming including web page development using HTML, and CSS. Prerequisites: CPSC 207 or permission of instructor.

### 315 Simulation: Theory and Application (3)

Theory of computer simulation, including applications of discrete models of industrial and management systems. Topics include probability distributions, random number generation, queuing, design, and analysis of simulation experiments. Includes significant use of simulation software. Prerequisites: CPSC 207 and either MATH 114 or 345.

### 328 Data Structures (3)

This course introduces the concepts and techniques of structuring data for complex problems, and provides experience in accessing and processing this data. An object-oriented paradigm is used throughout the course. The course is designed especially for students who will choose a career in information technology. Prerequisite: CPSC 207.

### 417 Systems Analysis and Design (4)

This course includes a study of systems, particularly those which lend themselves to computer representation, a study of systems analysis and design, and the completion of a major systems project done in a team environment. The project will involve the analysis of an actual system problem, the writing of a system proposal to solve the problem, the presentation of the proposal to the users of the system, and the design and construction of a prototype to implement the proposal. Prerequisite: CPSC 207 or permission of instructor.

### 429 Database Systems (3)

Fundamental concepts of database development, in particular data modeling, database design, and database implementation, as well as managing, retrieving, and updating data within a relational database system. Hands-on experience includes use of the Structured Query Language (SQL) to define, construct, and query a database. Students complete a semester-long project done in a team environment. Prerequisite: CPSC 207 or permission of instructor.

### 497 Independent Study (1–3)

Provides properly qualified students with an opportunity for independent study and careful consideration from an advanced standpoint of selected topics in computer science. Departmental approval required. May be repeated.

### 499 Internship in Computer Science (1–3)

Professional work experience in computer science with a business or organization.