

## *Computer Science (CPS)*

### **CPS 102 Exploring Computer Technology**

3 Hours

Prerequisites: MAT 062 or equivalent  
4 hours weekly (2-2)

This course will serve as an introduction to computer systems, including their hardware and software, and their use in problem solving. The course has three major goals: to foster computer literacy and competency, to explore the use of various application packages, and to develop skill in problem solving using computer technology. The focus will be on a conceptual understanding of how computer systems are used to represent, store, manipulate, and communicate information rather than to provide training on any one particular application. This study of the uses and limitations of technology will lead to an informed decision about using computer resources.

### **CPS 111 Introduction to Technology for Educators**

3 Hours

Prerequisites: Students must have basic skill in word processing, spreadsheet, and database programs; or consent of instructor. A high school course which introduces this software or completion of CPS 102, or CIS 101, or CIS 207 or equivalent will satisfy this prerequisite.  
4 hours weekly (2-2)

This course is an introductory/intermediate technology, digital media, and Web applications course for educators and education majors. It will introduce participants to current trends in technology integration in K-12 classrooms and include hands-on activities that will develop performance skills in technologies used in the classroom. Topics will include: • use of various hardware devices such as interactive whiteboards, student response systems, projector systems and computers • use of computer software applications to produce digital documents, spreadsheets, multi-media presentations, and recordings, both audio and video • use of Web 2.0, "cloud" applications for research, social networking, website construction, wiki collaboration, and multi-media storage and distribution • exploration and discussion of current issues surrounding technology integration. Both the Illinois State Board of Education Technology Standards for All Teachers and the International Society for Technology in Education (ISTE) standards for teachers (NETS-T) and students (NETS-S) are integrated throughout the course curriculum.

### **CPS 176 Introduction to Computer Programming**

4 Hours

Prerequisites: MAT 062 or equivalent  
5 hours weekly (3-2)

This course provides an initial exposure to computers and programming, fostering competence in a high-level language via hands-on experience. This course serves as a prerequisite for more intensive study of other high-level languages and lays the groundwork for understanding problem-solving and common programming language constructs. Students will be introduced to structured programming methodologies, syntax and semantics of a popular, high-level programming language, algorithm development, and good programming style guidelines. Students will be expected to complete a variety of programming lab assignments both during scheduled lab times and outside of class. This course is also offered as part of a study abroad program. Contact the International Education Coordinator for more information.

### **CPS 202 Discrete Structures (Also MAT 125)**

IAI – CS 915, MI 905

3 Hours

Prerequisites: MAT 108 or MAT 111 either with a grade of "C" or higher or assessment  
3 hours weekly (3-0)

This course is a general education mathematics course which fulfills 3 hours of the core curriculum mathematics requirement. It will lay the groundwork for students interested in computer arithmetic, sets, relations and functions, logic, Boolean algebra, elementary matrix operations, combinations, permutations, and counting techniques, and basic concepts of probability. **This course is ordinarily offered in the fall semester in odd numbered years.**

### **CPS 203 Introduction to Scientific Programming**

4 Hours

Prerequisites: CPS 176 or consent of instructor and MAT 131

5 hours weekly (3-2)

A computer programming course using the modern, structured high-level language C + +. This course is intended for math and engineering majors, and will emphasize the use of programming in problem analysis and problem solving with applications in mathematics. Topics will include syntax of the language, data types, control structures, numerical methods, arrays, modular design through functions, object-oriented design, and simulations. Emphasis will be given to problem solving, program design, testing, and documentation.

### **CPS 204 Introduction to PASCAL**

3 Hours

Prerequisites: CPS 176 or consent of instructor  
3 hours weekly (3-0)

A course in the high level, general purpose PASCAL language. Attention will be given to the vocabulary and syntax of the language, problem formulation, and the proper design of a PASCAL program utilizing structured programming techniques.

### **CPS 206 Computer Science I**

IAI – CS 911

4 Hours

Prerequisites: CPS 176 or consent of instructor and MAT 111

5 hours weekly (3-2)

The first in a sequence of courses for majors in Computer Science, Mathematics, and Engineering. Introduces a disciplined approach to problem-solving and algorithm development in addition to an introduction to procedural and data abstraction. Covers: selection, repetition, and sequence control structures; program design, testing, and documentation using good programming style; block-structured high-level programming languages; and arrays, records, and files utilizing a popular, high-level programming language.

### **CPS 207 Java Programming**

4 Hours

Prerequisites: CPS 176 or consent of instructor  
5 hours weekly (3-2)

An introduction to the Java Programming language with object-oriented design. Students will be introduced to the use of pre-written Java classes and methods as well as building their own classes and applying these to the creation of graphical user interfaces, Web-based programming and multimedia applications. Topics to be covered include Java applications, Java Applets, data storage, sequence, selection and repetition control structures, methods, arrays, classes, and object-oriented programming. Good program style considerations will be emphasized.

### **CPS 208 Assembly Language Programming**

3 Hours

Prerequisites: CPS 204 or 206 or consent of instructor

3 hours weekly (3-0)

An introduction to the logical basis and basic computer organization of a particular system through the treatment of assembly language. Topics studied include: machine representation of numbers and characters, basic assembly language syntax, machine operations, addressing techniques, as well as machine-level input/output programming.

### **CPS 215 Computer Science II**

IAI – CS 912

4 Hours

Prerequisites: CPS 206 or 207 with a grade of "C" or higher or consent of instructor

5 hours weekly (3-2)

The second in a sequence of courses for majors in Computer Science. Covers: design and implementation of large-scale problems; abstract data types; data structures (files, sets, pointers, lists, stacks, queues, trees, graphs; program verification and complexity; recursion; dynamic concepts (memory, scope, block structures); text processing; and an introduction to searching and sorting algorithms utilizing a popular, high-level programming language. **This course is offered in the fall semester only.**