

## *Computer Science (CPS)*

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

IAI – CS 910

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**

IAI – EDU 904

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 introduces educators and education majors to the knowledge and skills required to demonstrate their proficiency in the current technology standards. The course focuses on both knowledge and performance, and includes hands-on technology activities. Topics will include use of various hardware such as computers, scanners, and digital cameras to improve instruction as well as software such as word processor, spreadsheet, database management, and multimedia presentation application packages.

### **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 the language, algorithm development, and good programming style guidelines. Students will be expected to complete a variety of programming projects. The scheduled lab times are designed for students to have access to instructor help while completing these projects. Check the current schedule of classes to determine the programming language currently being utilized for this course.

*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**

IAI – EGR 922, MTH 922

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, MTH 922

4 Hours

Prerequisites: CPS 176 or consent of instructor and  
MAT 111  
5 hours weekly (3-2)

This course is the first in a required sequence of courses for majors in computer science and related fields. It provides a study of programming using a modern, object-oriented high-level programming language. Included are discussions of programming constructs (selection, repetition, and sequence) as well as data representation and storage, including arrays, records, objects, and files. Primary emphasis will be given to a disciplined approach to problem solving, algorithm development, program design, testing, and documentation. Check the current class schedule to determine the programming language currently being utilized for this course.

### **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)

A continuation of the development of structured and object-oriented programming concepts and their use in program development utilizing a popular, high-level programming language. Topics include abstract data types and data structures: stacks, queues, files, sets, pointers, lists, trees, graphs. Program verification, recursion, and algorithm analysis will be addressed. This is the second course in a required series for computer science and related majors. Check the current class schedule to determine the programming language currently being utilized for this course. **This course is offered in the fall semester only.**