

# COMPUTER SCIENCE (CPS) - ROCK COUNTY

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## Courses

### CPS 100 Computers and Society 1-3 Units

Study of the functions of computers, their applications & the resultant social changes, both desirable & undesirable. Consideration of the value systems that are threatened as computer technology continues to expand. No programming required.

### CPS 101 Computer Orientation 1 Units

An Intro to the campus computing set-up. Emphasis on what computers can do; using computers rather than programming them.

### CPS 102 Computer Science Orientation 1 Units

This course is designed to help students interested in computer Sci. obtain necessary tools & background info to become successful computer Sci. students & instructional technology workers. Possible topics covered include info technology & computer-related curriculum, majors & careers, course transfer guidelines (TIS), history of computing, ethics, study skills, test taking & time Mgmt. skills & other current instructional technology topics.

### CPS 103 Computer Fundamentals 1 Units

An overview of computers, what they are & how they work. Typical topics include history, hardware, programming languages & operating systems, application software, communications, career opportunities & ethical issues. Also included is an Intro to the campus computing network.

### CPS 104 Computer Fundamentals II 1 Units

A continuation of CPS 103 with increased emphasis on advanced concepts. Typical topics include systems analysis/design/implementation, system security, MIS/decision support systems, computer applications in business & industry, structured design & programming, artificial intelligence, advanced application & future computer systems.

PREREQ: CPS 103

### CPS 105 Computer Applications 1-3 Units

Principles & use of computer applications including word processors, spreadsheets, & data bases. May also cover other applications such as telecommunications, graphics, Stat., simulations, or CAI. Does not include teaching of programming. Course may not be taken more than once for degree credit.

### CPS 106 Word Processing and Presentation Concepts 1 Units

Text entry, editing, manipulation, & presentation. Covers typical as well as many advanced procedures of word processing & presentation software. This course involves extensive h&s-on experience.

### CPS 107 Spreadsheet Concepts 1 Units

Typical features & application of electronic spreadsheets. This course involves extensive h&s-on experience.

### CPS 108 Database Concepts 1 Units

Creation of data files & data manipulation (editing, sorting, deleting, etc.). Report definition & generation. Accessing & searching of remote data bases. Includes extensive h&s-on experience.

### CPS 109 Internet Applications 1 Units

Locating & evaluating info using Internet services such as electronic mail, the World Wide Web, file transfer & on-line interest groups. Current social & ethical issues. Web page creation. Includes extensive h&s-on experience.

### CPS 110 Introduction to Computer Science 3 Units

How computers work, communicating with computers, areas of application & significance, simple Algebraic Language programming, elementary data processing & problem solving. Instruction & significant experience in BASIC.

PREREQ: MAT 105 ANTIREQ: CPS 103 OR 130

### CPS 120 Introduction to E-Commerce 3 Units

(BUS 220 & CPS 120 are the same course.) This course will familiarize the student with the basics of e-commerce. Major topics include the basics of the internet, entrepreneurship, the creation of a business plan, financing, web site design, & e-business Mgmt.. Students will develop a background in electronic commerce technology through exploring infrastructure & emerging technical issues in support of e-commerce.

### CPS 130 Introduction to Programming 1-2 Units

The basics of programming in BASIC for beginners. Introductory info on editing, program structure, data types, input, output, calculating, looping & selection. Short programs will be written & tested on a computer.

### CPS 139 Web Page Development 2 Units

Development of web pages using HTML & Cascading Style Sheets. Intro to XML documents & XHTML standards. This course involves extensive h&s-on experience.

### CPS 149 Fundamentals of Web Programming 2 Units

Intro to client-side Web programming. This course covers basic concepts of computer programming by developing interactive applications on the Web using a scripting language.

PREREQ: CPS 139

### CPS 216 Problem Solving and Programming Techniques in C++ 4 Units

Program design using both modular & object-oriented methods. Topics covered to include stream I/O, recursion, multi-dimensional arrays, sorting & searching, pointers & dynamic memory allocation, classes & abstract data types, & operator overloading.

### CPS 240 Advanced Visual Basic 3 Units

Covers the user interface of Visual Basic & presents common programming structures. Advanced topics include object-oriented programming & accessing databases using Visual Basic.

PREREQ: CPS 110 OR CPS 130 OR CPS 216 OR CPS 245 OR CONSENT OF INSTRUCTOR

### CPS 245 Computer Science I: Object-Oriented Programming 4 Units

Introduces the fundamental concepts of programming from an object-oriented perspective. Topics include simple data types, control structures, an Intro to array & string data structures & algorithms, text & binary files, as well as the social implications of computing. The course emphasizes developing fundamental programming skills in the context of a language that supports the object-oriented paradigm.

PREREQ: MAT 110 OR CONCURRENT REGISTRATION OR CONSENT OF INSTRUCTOR

### CPS 255 Computer Science II: Objects and Data Abstraction 3 Units

Continues the Intro from CPS 245 to the methodology of programming from an object-oriented perspective. Through the study of object design, this course also introduces the basics of human-computer interfaces, graphics, & the implementation of fundamental data structures including lists, stacks, & queues. The course includes a significant software development Proj., with an emphasis on software engineering principles & debugging techniques.

PREREQ: CPS 245 AND MAT 110

**CPS 256 C++ as a Second Language 2-3 Units**

Program design using both procedural- & object-oriented paradigms in C++ for students who have significant experience with a previous language. Includes a review of basic structured program techniques in the context of C++. Topics also include multi-dimensional arrays, pointers & dynamic memory allocation, class creation, operator overloading, inheritance & object-oriented design.

PREREQ: COMPETENCY AT THE MAT 110 LEVEL AND 2 CREDITS OF A 200-LEVEL PROGRAMMING COURSE OTHER THAN C++ OR CONSENT OF INSTRUCTOR  
ANTIREQ: CPS 216

**CPS 260 Programming in Assembly Language 3 Units**

An Intro to microcomputer assembly language programming & architecture for students with previous exposure to a high level language. Topics typically include machine instruction sets, interrupts, boolean logic, binary coding of numeric & alphanumeric data, arrays & input/output. Optional topics may include file access, macros, graphics & mixed language programming.

PREREQ: CPS 110 OR CPS 130 OR CPS 216 OR CPS 245 OR CONSENT OF INSTRUCTOR

**CPS 265 Computer Science III: Algorithms and Data Structures 3 Units**

Builds on the Intro to object-oriented programming begun in CPS 245 & CPS 255, but using a different language than that used in those courses. Data structure Surv.ed include hash tables, binary search trees, & graphs, as well as linked implementations of lists, stacks, & queues. Through iterative & recursive implementation of the fundamental algorithms on those data structures, the course Introduces algorithm analysis & computational complexity.

PREREQ: CPS 255 AND MAT 211, 221 OR 230, OR CONSENT OF INSTRUCTOR

**CPS 291 Special Topics 1-3 Units**

In-depth treatment of subjects Introduced in other CPS courses. Choice of topics depends on student interest, staff & equipment availability.

Typical topics include file h&ling, operating systems, social implications, simulation, Mgmt. tools, specialized languages, current technology, numerical methods, artificial intelligence & digital logic.

PREREQ: CONSENT OF INSTRUCTOR

**CPS 294 Internship in Computer Science 1-3 Units**

Internship or service learning Proj. partnering students with organizations in the community or on campus. The course should provide practical experience appropriate to the student's educational goals by applying knowledge & skills learned in previous CPS courses in our institution. Student & instructor should meet regularly to prepare for & evaluate experiences. This course should not be used to employ students as campus workers by substituting credit for wages. Repeatable for a maximum of six credits.

PREREQ: AT LEAST FOUR CREDITS OF PRIOR CPS COURSEWORK AND CONSENT OF INSTRUCTOR

**CPS 299 Independent Study in Computer Science 1-3 Units**

Indp. study under the supervision of an instructor. The work may, for example, consist of advanced Lab investigation into a particular topic or library research & writing of a paper on some subject of interest.

PREREQ: CONSENT OF INSTRUCTOR