COMPUTER SCIENCE (CS)

CS-115 Introduction to Problem Solving and Programming

3 Credits
Lecture: 3 hours per week
Offering: Fall, Spring, and Summer, All Years
This course provides an introduction to computational thinking and problem solving. Students will be able to apply elementary computing concepts including variables, loops, functions, lists, conditionals, concurrency, data types, simple object oriented concepts, I/O, events, syntax, and structured programming. Basic concepts of computer organization and editing, and the influence of computers in modern society will be explored. NOTE: CS-115 carries no credit if taken after successful completion of higher numbered computer science courses.
Prerequisites: MATH-108 or an appropriate score on a placement test.

CS-150 Computer Science I
4 Credits
Lecture: 3 hours per week, **Lab:** 2 hours per week
Offering: Fall and Spring Only, All Years
This course offers an introduction to the field of computer science using a current programming language. Central themes of the class include an introduction to computer organization; algorithmic problem solving; structured and object oriented program design; and the societal and professional context in which computer science exists. Fundamental data types including arrays and structures will be explored and concepts such as complexity, invariants, abstract data types, pointers, and linked lists will be introduced.
Prerequisites: CS-115, MATH-144, MATH-147 or an appropriate score on a placement test.
Corequisites: CS-150L

CS-151 Computer Science II
4 Credits
Lecture: 3 hours per week, **Lab:** 2 hours per week
Offering: Fall and Spring Only, All Years
This course provides continuing experience in problem solving and software design methods. The exploration of recursion is continued and the entire software-design cycle is considered in greater depth. Introduction to abstract data types and fundamental data structures will cover topics: writing code to generate, use, and maintain complex dynamic structures, including linked lists, pointers, stacks, queues, sorts, searches, and trees. Other topics include a continued development of skills in the analysis of algorithms, dynamic memory use, and the use of external files.
Prerequisites: CS-150
Corequisites: CS-151L
Pre/Corequisites: MATH-187

CS-155 Computer Organization and Assembly Language
3 Credits
Lecture: 3 hours per week
Offering: Spring Only, All Years
This course covers topics including digital logic, machine-level representation of data, and processor architecture covering the ALU, control unit, assembly language, memory organization, addressing methods, I/O and interrupts.
Prerequisites: CS-150
Pre/Corequisites: MATH-187

CS-210 Programming Languages
3 Credits
Lecture: 3 hours per week
Offering: Fall Only, All Years
This course develops fundamental concepts of major programming languages, with primary emphasis on language features and their role in designing code and software. Students will study the constructs of programming language design including a conceptual study of procedural, data-flow, functional, and object-oriented languages.
Prerequisites: CS-151

CS-240 Digital Logic
4 Credits
Lecture: 3 hours per week, **Lab:** 2 hours per week
Offering: Spring Only, Even Years
This course includes the following topics: digital logic concepts, logic design, Karnaugh maps, combinational and sequential networks, state tables, state machines, and programmable logic arrays. Laboratory activities use basic lab equipment, logic analyzers, and digital oscilloscopes.
Prerequisites: MATH-170 or MATH-187
Corequisites: CS-240L

CS-241 Computer Operating Systems
3 Credits
Lecture: 3 hours per week
Offering: Spring Only, All Years
This course provides an overview of operating systems and operating system principles. It includes sections on concurrency, scheduling and dispatch, memory management, net-centric computing, OS security, and process management. Concurrent programming using threads is also explored.
Prerequisites: CS-151, CS-155
Pre/Corequisites: CS-228 or CS-270

CS-270 System Software
3 Credits
Lecture: 3 hours per week
Offering: Fall Only, All Years
This course is designed to provide an introduction to the UNIX operating system and variants (such as Linux) as well as system programming concepts. Programming productivity tools will be introduced such as making, debugging, linking, and loading tools. Shell programming and scripting languages will also be used. System programming tools include process management and interprocess communication, exception handling, network concepts, and network programming.
Prerequisites: CS-151