Computer Science

CS 100 Survey of Computer Applications (½ course credit)

Hands-on experience with word processing, spreadsheet, database, graphics, simulations, World Wide Web. Overview of computing from microcomputers to supercomputers, history of computing, networks, artificial intelligence, social issues. Not applicable toward a computer science or computer information systems major. Fall and Winter Terms. Prerequisite: MA 90 competency.

CS 102 Computer Applications and Issues in Business (½ course credit)

Extension of CS 100. Exploration in greater detail of computer applications, misuse, ethics in business. Study of current software applications through laboratories, demonstrations, assignments with emphasis on spreadsheet software, macroprogramming. Not applicable toward a computer science or computer information systems major. Winter Term. Prerequisite: CS 100.

CS 120 Introduction to Computers and Programming

Foundation in structured and object-oriented programming methodology with a high level language. Special emphasis on decision and looping structures, subprograms and objects used in development of computer programs. Focus on algorithm development and a variety of applications provides basis for more advanced courses. Mathematical Reasoning. Prerequisite: MA 90 competency.

CS 149 Computer Language Seminar (½ course credit)

Seminar class dealing with the syntax, semantics and application of a specific language. May be retaken for credit with change of language. No more than two may count toward CS/CIS major. Prerequisite: CS 120.

CS 195, 295, 395, 495 Special Topics

Topics and credits vary. See course schedule.

CS 210 COBOL with Business Applications

Syntax of COBOL and development of algorithms in solving common business problems. Emphasis on program structure, modularity, unique characteristics of COBOL. Students write programs that deal with file manipulation processes, including multiple input and output files. Winter Term odd years. Prerequisite: CS 120.

CS 220 Object-Oriented Programming and Introduction to Data Structures

Constructs of a high level language, techniques and principles essential for constructing non-trivial computer programs. Classroom discussion and programming assignments introduce string processing, searching, sorting, recursion, data structures and abstraction with focus on object-oriented programming. Winter Term. Prerequisite: CS 120.

CS 230 Organization of Programming Languages

Programming languages of current and historical interest in light of design principles. Formal methods of language syntax and semantic specification in addition to functional, imperative, declarative, object-oriented language models. Emphasis on run-time behavior for sample programming languages. Prerequisite: CS 220.

CS 240 Assembly Language Programming

Introduction to computer architecture through assembly language programming. Students program in an assembly language while learning fundamental concepts. Addressing techniques, macro processing, subroutine linkage, machine representation of data, machine execution cycles. Prerequisite: CS 120.

CS 249 Computer Science Seminar

Topics of student interest and current importance, usually on a three-year rotation. Upcoming offerings include: parallel processing, security and encryption, and data mining language translation. Prerequisite: dependent on topic.

CS 250 Systems Analysis

Development, management of information systems. Students practice concepts through a system-design case study. Fall Term odd years. Prerequisite: CS 120.

CS 260 Introduction to Computer Graphics

Basic principles, techniques of computer graphics. Development of graphics functions for use in application programs. Special emphasis on standard transformations for viewing both two- and three-dimensional graphics. Winter Term odd years. Prerequisites: CS 120, CS 220.

CS 270 Software Engineering

Examination of tools and techniques used in construction and maintenance of complex software systems. Object-oriented analysis, design, implementation. Managing software development teams, formal methods, testing techniques, documentation, process management. Fall Term even years. Prerequisite: CS 220.

CS 280 Internet Programming

Introduction to the software technologies that comprise the Internet with an emphasis on underlying principles, protocols, and architectures. Hands-on programming projects using client-side and server-side techniques to support distributed, dynamic Internet applications. Prerequisite: CS 120.

CS 281 Field Experience (variable credit)

Supervised exploratory experience outside the classroom. Application of academic learning to practical experience. Not applicable toward major. P/D/F only. Prerequisites: second-year standing, 2.5 cumulative GPA.

CS 310 Automata and Formal Languages

Abstract models of computation, including finite state automata, pushdown automata, Turing machines and their relationship to formal languages and grammars. Introduction to computational complexity and NP-complete problems. Prerequisite: CS 220.

CS 320 Data Structures and Algorithm Analysis

Introduction to intermediate data structures and deepening understanding of elementary data structures introduced in CS 220. Graph representations, balanced trees, multi-lists, hash tables, files. Relationship between data structures and run-time and space efficiency. Winter Term even years. Prerequisite: CS 220.

CS 330 Computer and Data Networks

Focus on layered architectures with OSI and TCP/IP models providing the primary examples. Includes LAN and WAN architectures. Investigation of various packages within the TCP/IP protocol suite. May Term every third year. Prerequisite: CS 120.

CS 340 Computer Organization

Examination of computer organization and architecture to learn how computer hardware works at digital logic, micro-programming, assembly, and programming language levels. Design goals and implementation strategies for I/O handling, memory units, processors. Micro, mini, mainframe, supercomputer case studies. Winter Term odd years. Prerequisite: CS 220.

CS 350 Information Resource Management

Database management systems and administration, illustrated by a major application using one particular database. Information system operation, maintenance, control, security. Impact of computers in manufacturing processes, business offices, business management, artificial intelligence. Fall Term even years. Prerequisite: CS 120.

CS 360 Operating Systems

Study of assumptions and goals underlying operating system design. Multi-programming and related issues of memory, process, CPU management. Student projects involve systems programming. Fall Term odd years. Prerequisite: CS 220.

CS 371 Internship

Integration of classroom theory with planned and supervised periods of progressively challenging employment related to students' career objectives. Course credit to be applied toward major requires department approval. P/D/F only. Possible off-campus costs. Prerequisite: third- or fourth-year standing; two computer science course credits; two mathematics course credits; 2.5 grade point average, cumulative and in major; department approval.

CS 372 Internship

Integration of classroom theory with planned and supervised periods of progressively challenging employment related to students' career objectives. Course credit to be applied toward major requires department approval. P/D/F only. Possible off-campus costs. Prerequisite: third- or fourth-year standing; two computer science course credits; two mathematics course credits; 2.5 grade point average, cumulative and in major; department approval.

CS 373 Artificial Intelligence

Introduction to the construction of intelligent software agents. Coverage of fundamental topics in traditional AI research such as: problem solving and search, game playing, knowledge representation, logic and inference, planning, probabilistic reasoning, learning, and language processing. Winter Term every third year. Prerequisite: CS 220.

CS 399 Supplemental Instruction: Computer Science (½ course credit)

Teaching practicum in a specific area of study. Student SI leaders participate in leader training, attend classes for which they serve as leaders, prepare and lead study sessions that reinforce course content, model and teach effective study strategies. P/D/F only.

CS 450 Independent Study (variable credit)

Individual study on a student-selected topic with approval of supervising instructor.

CS 460 Systems Design Project

Integration of computer science information in a student-selected design project. Experience in designing, implementing, and testing a project. P/D/F only. Prerequisites:
CS 220, fourth-year standing, or final Winter Term on campus.

CS 461 Perspectives in Computer Science

Student readings, discussion, papers, presentations on the history and philosophy of computer science and current ethical and social issues involving computers and society. Capstone. Writing intensive. Prerequisite: fourth-year CS or CIS major or final Winter Term on campus.