

COMPUTER SCIENCE COURSE DESCRIPTIONS

CMPS 100: INTRODUCTION TO COMPUTER SCIENCE (4)

CMPS 100: COMPUTERS IN SOCIETY (4)

Society appears on the threshold of universal computer dependence. Will this advance of science and technology cause a global revolution of social change? Can we use computers to solve human problems? Investigate these possibilities through an introduction to the science of computing. Word processing, database management, spreadsheets, and other application programs will be examined. Open to first-year students.

CMPS 110: COMPUTER BASICS AND APPLICATIONS (2)

An introduction to the basics of personal computers and applications including word processing, spreadsheets, graphics, presentations, web page development, and database management. Available in both PC and MAC formats. Course is offered entirely online and requires students to work independently. Open to first-year students during Spring Term only.

CMPS 130: INTRODUCTION TO OBJECT-ORIENTED COMPUTER PROGRAMMING (4)

An introduction to object-oriented programming using Java. The programming concepts of sequence, selection, and iteration will be applied in object-oriented programming. No prerequisite. Open to first-year students.

CMPS 160: COMPUTER SCIENCE I (4)

An introduction to the fundamentals of computer science, including problem solving, data abstraction, and digital computer programming. Emphasis is placed on object-oriented programming, program design, and applications of computers in mathematics, statistics, and the sciences. Classes, dynamic data structures, and recursion are introduced. Open to first-year students.

CMPS 197F: FIRST-YEAR SEMINAR - WOMEN AND TECHNOLOGY (4)

Love it or hate it, we all end up using technology. It's not just for boys, either. For as long as we have records, women have used technology. This course will allow us to explore the role of technology in the lives of women. We will also be using computer technology to expand our powers as students. New Horizon student seminar: placement to be determined during the summer.

CMPS 200: MICROCOMPUTERS IN THE BUSINESS WORLD (4)

Microcomputer business applications, including spreadsheets, graphics, database management, Web page development, and word processing are explored in depth. Open to first-year students.

CMPS 250: SPECIAL TOPIC - ACCESS (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include designing and creating a database, querying a database, forms, reports, menus, and an introduction to the SQL language. This comprehensive approach to Access will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 250: SPECIAL TOPIC – DATA ANALYTICS AND VISUALIZATION (4)

Data Analytics principles and processes will be studied including gathering and transforming datasets, visualization methods, and how models of data are developed and evaluated. The application of data analysis software to real world examples will also be investigated. Prerequisite: Data Structures or permission.

CMPS 250: SPECIAL TOPIC – DATA STRUCTURES (4)

Students will study fundamental data structures and their applications to problem solving. Database concepts will also be introduced. Prerequisite: Introduction to Computer Science or permission.

CMPS 250: SPECIAL TOPIC - EXCEL (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include embedded charts, formulas, functions, data tables, querying, and pivot tables. This comprehensive approach to Excel will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 250: SPECIAL TOPIC - FRONTPAGE (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include Web page design, templates, tables, frames, database interfaces, and maintenance. This comprehensive approach to FrontPage will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 250: SPECIAL TOPIC - POWERPOINT (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include using design tables, outlines, clip art and photos, charts and tables, Web presentations, visual elements, and self-running presentations. This comprehensive approach to PowerPoint will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 250: SPECIAL TOPIC - PUBLISHER (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include designing and creating a publication, newsletter, brochure, business forms, and tables. This comprehensive approach to Publisher will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 250: SPECIAL TOPIC - WORD (1)

This course is comprised of a series of projects that allows students to learn through hands-on experience. Areas of study include formal reports and papers, Web pages, resumes, newsletters, mail merge, and master documents. This comprehensive approach to Word will prepare students for the Microsoft Office Specialist Certification Exam. No prerequisite.

CMPS 255: OPERATING SYSTEMS (4)

A computer's resources are managed by its operating system. These controlled resources include peripheral devices, data storage, memory allocation, and the central processing unit. Various aspects of computer operating systems will be examined in detail in the course, including processes, interprocess communication, semaphores, message passing, scheduling, swapping, virtual memory, paging algorithms, segmentation, file systems, security, and deadlock. Prerequisite: CMPS 260.

CMPS 260: COMPUTER SCIENCE II (4)

An introduction to object-oriented programming (OOP). The basic Java programming skills mastered in CMPS 160 are expanded with the introduction of OOP techniques, including inheritance, polymorphism, interfaces, and abstract classes. In addition, graphics, applets, and GUI programming are explored. Open to first-year students. Prerequisite: CMPS 160.

CMPS 290: INDEPENDENT STUDY (2 or 4)

Independent study conducted below the advanced level. Application must be made with faculty prior to registration.

CMPS 312: SYSTEMS ANALYSIS (4)

A study of the overall systems analysis and design process. Emphasis is on a systems development life cycle and how it is implemented in an information system environment. Individual and group projects will explore the

analysis, evaluation, and design process applied to an existing or theoretical business system. Prerequisite: CMPS 160 or permission of computer science department.

CMPS 345: ALGORITHMS (4)

The process of developing and refining algorithms to efficiently solve problems will be explored. General techniques covered include Divide-and-Conquer algorithms, dynamic programming, greediness, and probabilistic algorithms. Sorting, searching, graphs, compression, cryptography, algorithm complexity, and NP-completeness are studied. Prerequisite: CMPS 260.

CMPS 352: PRINCIPLES OF COMPUTER ORGANIZATION (4)

Explores the architecture and organization of modern computer systems. Topics include the architecture of digital systems (gates, registers, combinatorial and sequential networks), fundamental building blocks of digital computers, control logic, microprogramming, microprocessors, pipelined and multiprocessor systems, and new technologies. Prerequisite: CMPS 260.

CMPS 366: THEORY OF COMPUTATION (4)

A survey of the mathematical theory of computation, including finite automata, Turing machines; regular, context free, context-sensitive, and unrestricted grammars; time and space bounded computations; complexity classes P, NP, PSPACE, and NP-complete; the halting problem; and probabilistic algorithms. Prerequisites: MATH 310 and CMPS 260.

CMPS 390: INDEPENDENT STUDY (2 or 4)

Independent study conducted at the advanced level. Application must be made with faculty prior to registration.

CMPS 399: INTERNSHIP (4)

May be proposed in any term.

CMPS 471, 472: SENIOR SEMINAR (1, 1)

Yearlong individual or group projects will explore the analysis, evaluation, and design process applied to an existing or theoretical business system. Students will present their individual and group projects at the Division III Science Seminar. Prerequisite: senior standing.