

Computer Science

CS 1000 Special Topics

Prerequisites: MATH 0203 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures
VARIABLE 1-4 Credits The student will demonstrate specified competencies in subjects not included in other computer science courses but which benefit students wanting additional training in or comprehension of the field. A specific topic is announced for each offering. Enrollment may be repeated with a change of topic. This course satisfies the computer proficiency requirement.

CS 1103 Introduction to Computers and Applications

Prerequisites: MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures
3 Credits This hands-on course affords students a basic understanding of computers and their application. Upon completion of this course, the student will be able to demonstrate the ability to use a computer operating system, an office suite, productivity tools, as well as the Internet at an introductory level. Advanced Standing is available. This course satisfies the computer proficiency requirement.

CS 1143 Beginning Programming

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement or by evaluation. § Criteria for evaluation is in division office.

3 Credits Designed for Computer Science majors, this course affords students a basic understanding of computer programming. Students will utilize accepted programming concepts and perform number system conversions and arithmetic. In addition, they will design and code structured modular programs using design tools such as hierarchy charts, flowcharts, and pseudocode. This course satisfies the computer proficiency requirement.

CS 1153 Introduction to Computing Technologies

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0103 or adequate math placement.

3 Credits Students will learn fundamental concepts of computing technologies. Topics will include computer hardware, operating systems, application software, networking, information security and privacy, information systems, program development, database management systems, social aspect of computing technologies, and cloud computing. This course satisfies the computer proficiency requirement.

CS 1333 Database Management Applications

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

3 Credits The student will use a selected database management program to create and edit database files. The student will also search, organize, and build reports, forms, and templates with the database files. This course satisfies the computer proficiency requirement.

CS 1343 Spreadsheet Applications

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement.

3 Credits Using selected spreadsheet software on a microcomputer, the student will apply the basic theoretical and practical concepts of an electronic spreadsheet as used in business applications. Study will include the design and creation of worksheets, templates, graphs, macros, and other options as they apply to the software being used. This course satisfies the computer proficiency requirement.

CS 1353 Computer Operating Systems

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; prerequisite or co-requisite CS 1103

3 Credits Students will learn the following important areas through a combination of lectures and hands-on projects: installing, maintaining and optimizing Windows operating systems, troubleshooting Windows and applications, connecting to and setting up a network, Windows resources on a network, computer security strategies, mobile devices, and client-side virtualization. A+ Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 1363 Digital Media Development

Prerequisites: MATH 0203 or adequate math placement; Prerequisite or Corequisite: CS 1103 or by evaluation. § Criteria for evaluation is in division office.

3 Credits This hands-on course affords students a basic understanding of industry standard design applications. Upon completion of this course, the student will be able to demonstrate the ability to create computer illustrations, graphics, page layouts, animations, video and audio, at an introductory level. This course satisfies the computer proficiency requirement.

CS 1413 Computer Hardware

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; prerequisite or co-requisite CS 1103

3 Credits Students will learn the following through class lectures and hands-on projects: identification, configuration, maintenance, troubleshooting, and repair of PC hardware including mainboards, BIOS, processors, memory, storage devices, peripherals, and printers. Other IT-related issues such as networks, safety and environmental concerns, customer relations, and professionalism are also presented. A+ Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 1543 Introduction to Scripting

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement

3 Credits Students will learn to use a scripting language to create scripts to automate the execution of tasks. They will learn to design, code, and test applications using the scripts. Topics include basic data types, control structures, regular expressions, input/output handling, and textual analysis. This course satisfies the computer proficiency requirement.

CS 2000 Special Topics

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

VARIABLE 1-6 Credits The student will demonstrate competencies with subjects not covered in other computer science courses. Each course will cover a specific topic and may be repeated with a change in content. This course satisfies the computer proficiency requirement.

CS 2113 Computer Based Information Systems

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

3 Credits Covers theory and practice for the design and use of computer-based information systems in organizations, with a focus on the relational database. Student projects will include designing and implementing relational database applications and designing a web page. This course satisfies the computer proficiency requirement.

CS 2123 Assembly

Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

3 Credits The student will demonstrate an understanding of the structure and operation of assemblers. Student will use IBM mainframe assembly language to solve programming problems involving Input/Output definitions, Loops, Decimal and fixed point arithmetic, register operations, control structures and report editing. This course satisfies the computer proficiency requirement.

CS 2143 Digital Video Editing

Prerequisites: MATH 0203 or adequate math placement, CS 1363.

3 Credits Students will develop both technical skills and creative techniques in a project-based learning environment. Many aspects of digital editing will be applied including digitizing audio and video, the composition of computer-generated graphics and animation, multiple audio layers, title overlay, and special effects. This course satisfies the computer proficiency requirement.

CS 2153 Cloud Computing

Prerequisites: CS 1353

3 Credits Students will demonstrate their understanding of planning, configuring, implementing, and maintaining cloud computing infrastructure, as well as the services it supports such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). This course satisfies the computer proficiency requirement.

CS 2163 Java

Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

3 Credits Student will develop object-oriented Java applications and applets, which demonstrate comprehension of fundamental programming structures, object-oriented programming, graphics, event handling, interface components, programming for the Internet, data structures, and exception handling. This course satisfies the computer proficiency requirement.

CS 2173 Oracle

Prerequisites: MATH 0313 or adequate math placement, CS 1143.

3 Credits Using Oracle as a platform, students will learn relational database concepts, sound database design and development techniques, and SQL commands. Topics include how to create and modify database tables; retrieve data from database tables; use subqueries to retrieve data; use table constraints, sequences, indexes, synonyms, views and functions; create users and assign privileges to users; create printable reports through SQL*Plus commands; practice SQL statement tuning. This course satisfies the computer proficiency requirement.

CS 2183 Linux

Prerequisites: MATH 0203 or adequate math placement, CS 1103 or by evaluation. § Criteria for evaluation is in division office.

3 Credits This course is an introduction to the Linux operating system for users. It is designed for those with a DOS/Windows operating system background with little or no knowledge of Linux. Topics include the development of Linux; basic Linux operating system concepts; a comparison of Linux to MS Windows; frequently used Linux programs and utilities, shells, editors, and tools; X window GUI and applications; Linux and the internet; setting up Apache web server software; basic HTML and CGI programming for Linux; use of virtual machine software to create virtual machines of guest operating system on top of host operating system. Linux+ Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 2193 Supporting Desktop Applications

Prerequisites: CS 1353

3 Credits Students will learn how to install, configure and support Microsoft Office applications running in a Microsoft Windows environment. Real-world examples and interactive activities are used to reinforce the following key concepts: configuring Internet Explorer and Outlook Express; resolving issues related to customizing Office Application; migrating from Outlook Express to Outlook; identifying and troubleshooting network problems; configuring Office security settings; and monitoring security vulnerabilities and updates. This course satisfies the computer proficiency requirement.

CS 2223 Systems Analysis and Design

Prerequisites: MATH 0313 or adequate math placement, ENGL 1113 and a 2000 level programming language.

3 Credits Students will investigate and participate in the analysis and design of information systems through application of the Systems Development Life Cycle. Topics include the role of the analyst, review of common business systems, preparation of data-gathering instruments, database design and normalization and module design. Computer Aided Software Engineering (CASE) tools such as data dictionary, data flow diagramming, data modeling, and structure charts will also be covered. This course satisfies the computer proficiency requirement.

CS 2283 Introduction to Virtualization

Prerequisites: CS 1353 or by evaluation § Criteria for evaluation is in division office.

3 Credits This course covers fundamental concepts and practical knowledge of virtualization technology. Students will learn to install and configure virtualization software, manage virtual networking and storage, deploy, manage, and migrate virtual machines, manage user access to the virtual machine infrastructure, monitor resource usage, increase scalability, apply patches, and manage higher availability and data protection. Students will gain hands-on experience through using virtualization software platforms. This course satisfies the computer proficiency requirement.

CS 2303 Networking Technologies

Prerequisites: MATH 0203 or adequate math placement; CS 1103

3 Credits Students will learn how to install, configure, and troubleshoot basic networking hardware, protocols, and services and to describe the features and functions of networking components. A foundational knowledge in the important areas of media and topologies, protocols and standards, network implementation, and network support will be developed using a combination of lectures and interactive assignments. This course satisfies the computer proficiency requirement.

CS 2363 C++

Prerequisites: CS 2163

3 Credits This course is a continuation of the study of object-oriented programming covered in CS 2163 Java. Students will use C++ to write programs that demonstrate comprehension of the advanced object-oriented features of the C++ language and of common data structures. Topics include pointer manipulation, overloaded operators, friends, exception handling, templates, linked lists, stacks, queues, trees, and time complexity associated with sorts and searches. This course satisfies the computer proficiency requirement.

CS 2373 iOS Programming

Prerequisites: CS 1543 or CS 1143

3 Credits Students will learn the skills to develop mobile applications on Apple mobile devices. Topics covered include Swift programming language, mobile app software architecture, Apple Integrated Development Environment Xcode, Interface Builder, and other related Apple software development kit frameworks. This course satisfies the computer proficiency requirement.

CS 2403 Computer Support Services

Prerequisites: ENGL 1113; MATH 0203 or adequate math placement and 9 credit hours of Computer Science courses.

3 Credits Students will demonstrate their understanding of planning, implementing, and maintaining a support center for both internal and external users of computer hardware and software. The main topics will include: the Help Desk, design of hardware and software specifications, performing a needs assessment, design of evaluation instruments, creation of both technical and non-technical documentation, working with customers in a support role, and ethical standards for the computing professional. This course satisfies the computer proficiency requirement.

CS 2413 Web Site Development

Prerequisites: MATH 0203 or adequate math placement. ENGL 0203, adequate placement score, or by meeting determined placement measures.

3 Credits Students will develop the skills needed to create a web site for personal or professional use. Design considerations will include accessibility standards, navigation techniques, audience needs, browser/platform concerns, and connection speeds. HTML, CSS along with a combination of other current technologies will be utilized for topics such as: building, formatting, enhancing, and publishing pages; maintaining a web site; manipulating graphics; creating printer and mobile versions; and incorporating JavaScript at an introductory level. This course satisfies the computer proficiency requirement.

CS 2433 Digital Media Scripting

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

3 Credits Students will develop both technical skills and creative techniques in a project-based learning environment. The student will learn to script in icon-based and command-based authoring languages to create interactive digital media and online applications. This course satisfies the computer proficiency requirement.

CS 2443 SQL Server

Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

3 Credits Students will learn terms, concepts and features needed to work with most relational databases. Using SQL Server databases and tools, they will learn concepts on how to design a database, retrieve data from and manipulate data in a database. They will also learn SQL programming and will be able to work with database features that will include views, stored procedures, functions, triggers and others. This course satisfies the computer proficiency requirement.

CS 2453 Visual Basic

Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

3 Credits The students will use Visual Basic to create object-oriented, event-driven programs. This course teaches the students to handle the visual interface and also learn programming concepts that include objects, decisions, loops, dialog boxes, arrays, menus, subs, functions, files, simple data access and various other programming topics as they apply to Visual Basic. This course satisfies the computer proficiency requirement.

CS 2463 Advanced Java

Prerequisites: CS 2163

3 Credits Student will develop Java applications and applets, which demonstrate comprehension of advanced programming structures and practices, object-oriented programming, fundamental data structures (arrays, linked lists, stacks and queues), SWING, Java Beans, database programming (JDBC), and distributed computing (Sockets/RMI). This course satisfies the computer proficiency requirement.

CS 2503 Network Administration

Prerequisites: CS 1353

3 Credits The students will use a network operating system to create and manage a local area network. The topics to be covered include creating and administering user and group accounts, managing network resources and administering permissions for files and folders, setting up and administering the printing environment, using the auditing functions, backing up and restoring files and folders. Preparatory course for certification through Microsoft. This course satisfies the computer proficiency requirement.

CS 2513 Client-Side Programming

Prerequisites: MATH 0313 or adequate math placement, CS 2413 and CS 1143 or by evaluation. § Criteria for evaluation is in division office.

3 Credits Students will create dynamic web applications using client-side programming. A combination of current scripting/programming languages and web page authoring software will be utilized for topics such as: using the Document Object Model, coding event handlers, validating user input, manipulating graphics, and creating interactive web pages. This course satisfies the computer proficiency requirement.

CS 2553 Advanced Visual Basic

Prerequisites: CS 2453

3 Credits Students will expand their knowledge of Visual Basic as used in business applications both for Windows and for the Web. Included will be topics such as advanced controls, MDI programming, collections, object-oriented programming, multi-tier applications, data access, ADO.Net, ASP.Net, and report writing. This course satisfies the computer proficiency requirement.

CS 2563 C#

Prerequisites: CS 2163

3 Credits Students will develop C# programs using the .NET framework that demonstrate comprehension of language syntax, fundamental program structures, object-oriented programming, windows applications, web applications, and database applications. Students will use ADO.NET, XML, ASP.NET, SOAP, and REST to create their applications. This course satisfies the computer proficiency requirement.

CS 2573 Oracle Database Administration

Prerequisites: CS 2173 or CS 2443

3 Credits Students will develop the skills needed for database administration. Topics covered include software installation, the creation of new databases, database architecture, management of database files, administration of user accounts, roles, privileges and profiles, database performance monitoring, and database backup and recovery strategies. This course satisfies the computer proficiency requirement.

CS 2610 Internship**

Prerequisites: MATH 0203 or adequate math placement, 15 credit hours of Computer Science courses.

1-3 Credits A practicum course intended to provide the student with work experience in various areas in his/her major under the supervision of an experienced technician/professional from the business community. This course may be repeated. This course satisfies the computer proficiency requirement.

CS 2623 Server-Side Programming

Prerequisites: MATH 0313 or adequate math placement, CS 1143 and CS 2413 or by evaluation. § Criteria for evaluation is in division office.

3 Credits Students will create interactive and dynamic web applications using server-side programming. A combination of current scripting/programming languages and web page authoring software will be used for topics such as maintaining state, processing data from the user, creating cookies, and interacting with databases. This course satisfies the computer proficiency requirement.

CS 2703 Introduction to Cyber/Information Security

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0103 or adequate math placement.

3 Credits Students will examine the field of information security. This course presents the managerial and technical aspects of information security and addresses knowledge areas of the CISSP (Certified Information Systems Security Professional) certification. Information security is discussed within a real-world context, by including examples of issues faced by today's professionals. This course provides numerous opportunities for hands-on work. This course satisfies the computer proficiency requirement.

CS 2713 Principles of Information Security

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; CS 1353

3 Credits Students will complete a comprehensive overview of network security, with an introduction to a variety of security problems faced by the computing industry. This course is mapped to the CompTIA Security+ Certification Exam. The course covers topics in general security concepts, communication security, infrastructure security, cryptography basics, and operational/organizational security. This course satisfies the computer proficiency requirement.

CS 2723 Secure Electronic Commerce

Prerequisites: MATH 0203 or adequate math placement; CS 1103

3 Credits Students will learn the fundamentals of secure electronic commerce technology, models and issues. This course includes principles and hands-on labs for secure electronic commerce. These include securing web sites and web applications, maintaining PCI DSS Compliance for E-commerce websites, performing web site vulnerability and security assessments, securing mobile communications, and securing personal and business communications. Legal and national policy issues related to secure electronic commerce are included. This course satisfies the computer proficiency requirement.

CS 2743 Enterprise Security Management

Prerequisites: CS 1353

3 Credits Students will learn the managerial aspects of computer security and risk management for enterprises. Topics include accreditation, procurement, extension and operation principles for secure enterprise information systems. Additional topics are security policy and plan development, contingency, continuity and disaster recovery planning, and incident handling and response. This course satisfies the computer proficiency requirement.

CS 2753 Information System Assurance

Prerequisites: MATH 0203 or adequate math placement, (CS 2703 or CS 2713) and (CS 2723 or CS 2743).

3 Credits Students will learn design and analysis methods for high assurance information systems. Topics covered will consist of safety, reliability, security, and specification of mission-critical system properties. Software and hardware validation, as well as verification and certification are also included. This course satisfies the computer proficiency requirement.

CS 2763 Network Security

Prerequisites: CS 1353

3 Credits Students will learn topics related to network vulnerabilities and defense. Topics include network and computer attacks, ethical hacking, penetrating testing, desktop and server vulnerabilities, securing embedded systems, web server security, wireless security, cryptography, and network protection systems. This course satisfies the computer proficiency requirement.

CS 2773 Secure System Administration and Certification

Prerequisites: MATH 0203 or adequate math placement, (CS 2703 or CS 2713) and (CS 2723 or CS 2743).

3 Credits Students will learn provisioning, procurement and installation of network, hardware and software systems for mission critical enterprises. System configuration and maintenance, incident handling and response, system certification, testing and validation are also covered. This course satisfies the computer proficiency requirement.

CS 2783 Cyber Forensics

Prerequisites: MATH 0203 or adequate math placement, CS 1353 and (CS 2713 or CS 2723 or CS 2743 or CS 2763)

3 Credits Student will learn the procedures for the identification, preservation and extraction of electronic evidence. Topics include auditing and investigation of network and host intrusions, and forensic tools and resources for systems administrators and information system security officers. This course satisfies the computer proficiency requirement.