Casper College

Computer Science Preparation Endorsement for Grades 6-12

Casper College, Department of Computer Science introduces the criteria needed for completion of a Computer Science Endorsement. Two Endorsements are available; one designed for grades K-8 instruction and another for grades 6-12. These endorsements are aimed at facilitating faculty in the public school system seeking to expand their current skill set.

The 6-12 Computer Science Endorsement program will prepare students to provide instruction in computer science courses taught at the Secondary level including AP Computer Science, as well as more advanced computer science classes. Students will complete four core computer science courses in preparation to provide instruction in these courses. Students will then have the option of taking one elective course specific to their interest, and needs related to their educational goals.

Grades 6-12 Endorsement Requirements		
Prefix/Course Number	Course Title	Credits
Required		
COSC 1010	Introduction to Computer Science	4
COSC 1030	Computer Science I	4
COSC 2030	Computer Science II	4
COSC 2150	Computer Organization	3
Elective (Earn at least 3 credits from the following)		
COSC, CMAP, CSEC, CSCO, ENTK, INET		3
	Total Credits	18

*Check Course Descriptions for Course prerequisites; low enrollment sections are subject to cancellation

Course Descriptions

REQUIRED

COSC 1010 - Introduction to Computer Science (4CR) *(3L, 2LB) [E]* Introduction to problem solving and programming using structured program development techniques applied to a high-level programming language. Students will participate in software experimentation in a closed laboratory setting. Additional programming exercises will be assigned for student to complete in open laboratories or on their own equipment. **Prerequisites:** Typing skills.

COSC 1030 - Computer Science I (4CR) *(3L, 2LB) [E]* Study of algorithmic problem solving using principles of structured programming and object-oriented design. Algorithms are implemented in a high-level, object-oriented language. Programming assignments and experimentation with software in a closed laboratory supplement the discussion. **Prerequisites:** COSC 1010 or instructor permission.

COSC 2030 - Computer Science II (4CR) (3L, 2LB) [E] Studies the use and implementation of abstract data structures in an object oriented programming environment. Topics include lists, stacks, queues, tables, binary trees, graphs, space and time complexity, recursion, and recursive data types. Programming exercises and experimentation with software in a closed laboratory supplement the discussion. Fall Semester Only. **Prerequisites:** COSC 1030.

COSC 2150 - Computer Organization (3CR) (3L) [E] Foundations class for advanced coursework in computer science. Use of assembly and high-level languages to study the structure and operations of computers. Topics include the logical organization of computers, structured data and instruction representation in various types of languages, and extensive study of the assembly language of a modern microprocessor. Most programming is done at the assembly language level. Spring Semester Only. **Prerequisites**: COSC 2030 (or concurrent enrollment) or permission of instructor.

ELECTIVES

COSC 2418 - Mobile App Development (3L) (3CR) This course focuses on the creation of mobile solutions for various modern platforms, including major mobile operating systems. Topics include mobile device architecture, programming languages, software engineering, user interface design, and app distribution. Fall Semester Only. **Prerequisites:** COSC 1030

CSCO 2000 - CCNA I Intro to Networks (3L) (3CR) This class focuses solely on networking fundamentals and is not specific to Cisco products or technologies. Student learning will include an understanding of the OSI networking model, networking components, premises wiring, industry standards, networking topologies and designs, and professional practices. Project learning experiences will include designing networks and the installation of network premises cabling.

CSEC 1530 - Computer Forensics (2L, 2LB) (3CR) The universal use of technology in every aspect of our lives has provided the need for the recovery of evidence in a digital format. In today's technology driven world most crimes and civil disputes involve the use of some form of a digital device. This course is designed to teach students how to perform computer crime investigations by identifying, collecting and maintaining digital artifacts to preserve their reliability for admission as evidence.

CMAP 1200 - Computer Information Systems (2L, 2LB) (3CR) An introduction to computers and information processing. Computer concepts covered include: the merger of computer and communication technologies, hardware, software, ethics, and security.

Students develop basic software skills in: word processing, spreadsheets, databases, presentations, Web designing, and integrating software. Keyboarding skills equivalent to 20 wpm is needed to succeed.

CMAP 1500 - Computer Keyboarding (2LB) (1CR) This course will give students hands-on experience with the microcomputer keyboard for application in computer usage. Designed for students with no previous keyboarding instruction. Extra laboratory work may be required.

CMAP 1550 - E-Portfolio Development (.5L, 1LB) (1CR) This course is designed for students to create a developmental electronic learning record that will provide reflection upon their learning and evidence of achievement in their particular field of study. Professional items will be added such as a resume, cover letter, and other pertinent examples to substantiate learning of assessment purposes for prospective employment. Technical skills include file management, media creation and upload. Information relevant to the aesthetics and functionality of e-portfolios will also be provided.

CMAP 1610 - Windows I (1L, 2LB) (2CR)This course is an introduction to the Windows operating system. The fundamentals of the Windows operating system will be explored. Students will learn to use the help, my computer, and Internet features of Windows. In addition, they will learn how to manage files and organize disks, how to customize the desktop, how to share data between programs, how to perform primary system maintenance, and they will be exposed to the multimedia/Internet functions of Windows. Windows experience is recommended.

CMAP 1615 - Operating Systems (3L) (3CR) This course is an introductory course on the basics of computer operating systems including file systems, configuration, inter-process communication, security, administration, interfacing, multitasking, and performance analysis. The effect of additional technologies such as multi-core processing, wireless technologies, PDA and telephone operating systems are also explored. Specific information related to Linux, Windows and UNIX operating systems will be examined at the end of the semester. Spring semester only.

CMAP 1715 - Word Processing Applications (1L, 4LB) (3CR) Will cover basic through advanced functions of word processing software. Training will be provided on microcomputers in the origination, processing, editing, and output of the document cycle. Various formats, applications, and exercises will be utilized to produce a variety of professional documents. Extra laboratory work may be required. A keyboarding speed of 30 wpm is needed to succeed. Completion of CMAP 1700 CMAP 1705 CMAP 1710 , (for a total of 3 credits) is equivalent to CMAP 1715.

CMAP 1765 - Spreadsheet Applications (2L, 2LB) (3CR) This course covers the features of Microsoft Excel. Topics include creating worksheets, charts, formulas; developing functions, formatting, Web queries, What-If analysis; creating static and dynamic Web pages, data tables, financial schedules; creating, sorting, and querying a list; creating templates; working with multiple worksheets and workbooks, object linking and embedding (OLE), using macros, importing data, and working with Pivot Charts.

Completion of CMAP 1750, CMAP 1755 and CMAP 1760 (for a total of 3 credits) is equivalent to CMAP 1765.

CMAP 1815 - Database Applications (2L, 2LB) (3CR) The following operations will be presented: designing, creating, editing, sorting, indexing, and searching database files. Database files will be used with Wizards to create queries, tables, forms, and reports. Students will apply operations and learn to use multiple databases, create advanced queries and custom forms and reports, integrate documents with other programs, and use the World Wide Web and hyperlink fields. Keyboarding skills equivalent to 20 wpm are needed to succeed. Completion of CMAP 1800, CMAP 1805 and CMAP 1810 (for a total of 3 credits) is equivalent to CMAP 1815.

CMAP 1850 - Document Publishing I (.5L, 1LB) (1CR) This is an introductory course to desktop publishing using current desktop publishing software. Students will learn desktop publishing concepts necessary to create flyers, brochures, and newsletter. They will also learn to create custom publications from scratch. Individual skills will be developed related to text editing, graphic design and editing, the use of placeholders, editing templates; and the creation of color schemes, font schemes, and customized building blocks. Extra laboratory work may be required. Keyboarding and word processing skills are strongly recommended for successful completion of this course.

CMAP 1851 - Document Publishing II (.5L, 1LB) (1CR) This class builds upon the skills learned in Document Publishing I. Students will learn how to build business information sets, create letterhead templates, business cards, work with tables for the creation of calendars, merge publications with data files, and create data driven catalogs. New skills will include the creation of new styles, working with master pages, Word Art, editing and embedding tables, and managing merged publications. Extra laboratory work may be required. **Prerequisites:** CMAP 1850

CMAP 1852 - Document Publishing III (.5L, 1LB) (1CR) This class builds upon the skills learned in Document Publishing I and II. Students will learn the more advanced concepts such as editing large scale publications, sharing and distributing publications, and creating an interactive web site including the creation of web forms. Individual student skills will include the ability to create a table of content, bookmarks, hyperlinks, and generation of html and Visual Basic code. Extra laboratory work may be required. **Prerequisites:** CMAP 1850 and CMAP 1851

CMAP 2630 - Presentation Graphics (1L, 2LB) (2CR) This course is designed to provide a working knowledge of presentation software. Procedures include authoring multimedia projects to include animation, sound files, object linking and embedding technology. Topics include using/creating/customizing design templates and themes, adding effects to shapes and objects, modifying visual elements, animation with motion paths, and the design/delivery of presentations. Extra laboratory work may be required. Completion of CMAP 2635 and CMAP 2636 (for a total of 2 credits) is equivalent to CMAP 2630.

ENTK 1010 - Elements of Surveying (3CR) (2L, 3LB) The principles of land surveying include distance measurement, elevations and angles. This course includes

fundamentals of trigonometry, the necessary review of algebraic principles, and a thorough introduction to the surveying instruments and their use. Lecture material is accompanied by field measurements providing adequate practical experience. Following the course, students should be able to assist with a survey crew or lay out a simple construction site. An introduction to the U.S. public land system and the principles of the GPS system are included.

ENTK 1060 - Excel Technical Applications (3CR) (3L) This course will focus on the technical application of Microsoft Excel and its use in an engineering/drafting office environment. Students will learn productivity tools in Excel and explore how to integrate Excel with computer aided drafting software to increase productivity.

ENTK 1500 - Engineering Graphics (4CR) (2L,4LB) An introductory course in industrial communications through technical drawing and computer-aided drafting. Topics include sketching, lettering, plan geometry, Multiview, and axonometric projections dimensioning using traditional drafting instruments and computer-aided drafting equipment.

INET 1590 - Web Page Design (2L, 2LB)(3CR) This course is an introduction to web page authoring. Students develop basic skills in: designing and formatting web pages and publishing to a server. This course will allow students to explore and discuss, among many topics, design basics, site purpose/location/content, matrix design, accessibility, usability, style, look and feel, liabilities, copyrights, inspiration and trends, etc. Extra laboratory work may be required.

INET 1595 - Word Press (1L, 2LB) (2CR) This course provides students with an overview of WordPress Content Management System. Includes hands-on design and creation of web pages and blogs for the internet. Designed to cover best practices for web site/blog creation.

INET 1610 - Dynamic Web Graphics (3CR) (2L, 2LB) This course introduces students to dynamic web graphics. Upon completion of this course, participants will have the skills to design and deliver low-bandwidth dynamic websites that incorporate vector graphics with bitmaps, audio, animation, and advanced interactivity to create web experiences that attract and engage visitors. Keyboarding ability is recommended.

INET 1650 - Web Programming I (2L, 2LB) (3CR) This course covers the essential concepts of HTML, CSS and beginning JavaScript. Students begin by developing a basic Web page and move on to developing a basic web site. Topics include: working with page design, tables, creating Web page forms; working with cascading style sheets using multimedia on the Web; HTML and elementary JavaScript; working with objects special effects; windows and forms.

INET 1885 - Adobe Photoshop for the Web (3CR) (2L, 2LB) This course will teach students key Photoshop concepts and techniques utilizing the industry standard digital imaging software, Adobe Photoshop CS3. Using clear, step-by-step, project based lessons, students will walk through the creation of a specific project with each class building on the student's growing knowledge of the program. The information will be

geared toward GUI (Graphic User Interface) specifically based on current WC3 web standards and best practices.

INET 2670 - Internet Ethics and Cyber Law (3CR) (3L) This course will discuss current statutes and possible future trends in Internet ethics and cyber law. We will discuss such topics as intellectual property law vs the first amendment, copyrights, trademarks and the Web, cookies, email privacy, censorship, seminal legal cases and much more.