

Discipline: Computer Information Systems

Originator: Mark Lehr

RIVERSIDE COMMUNITY COLLEGE DISTRICT INTEGRATED COURSE OUTLINE OF RECORD

COMPUTER INFORMATION SYSTEMS 21

CIS-21 : Introduction to Operating Systems

College: RIV
Lecture Hours: 54.000
Lab Hours: 18.000
Units: 3.00
Pass/No Pass
Letter Grade

Course Description

Prerequisite: CIS-1A

Course Credit Recommendation: Degree Credit

An introduction to operating system concepts, structure, functions, performance, and management is covered. A current operating system, such as Windows, Linux, or UNIX is used as a case study. File multi-processing, system security, device management, network operating systems, and utilities are introduced. 54 hours lecture and 18 hours laboratory. (TBA option)(Letter Grade, or Pass/No Pass option.)

Short Description for Class Schedule

An introduction to operating systems. (Same as CSC-21)

Entrance Skills:

Before entering the course, students should be able to demonstrate the following skills:

1. Identify the fundamental computer concepts and terminology used for input, processing, output, and storage.
 2. Identify the key features of a variety of software such as operating systems, word processors, spreadsheets, databases, communications and graphics.
 3. Use the Internet to send electronic messages.
 4. Understand and apply the principles of distance education software.
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Student Learning Outcomes:

Upon successful completion of the course, students should be able to demonstrate the following skills:

1. Demonstrate the installation, usage, and administration of a variety of operating systems.
 2. Identify operating system features, particularly as they pertain to system performance.
 3. Demonstrate how various operating systems interface with the network, user i/o, storage devices, and other hardware components.
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General Education Outcomes:

- District General Education - A2 Language and Rationality - Communication & Analytical Thinking
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Course Content:

1. Operating System Theory
 - a. Understand how an operating system works
 - b. Describe the types of operating systems
 - c. Understand the history of operating system development
 - d. Discuss single tasking versus multitasking
 - e. Differentiate between single-user and multi-user operating systems
 - f. List and briefly describe current operating systems
2. PC Operating System Hardware
 - a. Explain operating system hardware components, which will include design type, speed, cache, address bus, data bus, control bus, and CPU scheduling

- b. Describe the basic features and system architecture of popular PC processors
 - c. Identify the basic features and characteristics of popular PC processors
 - d. Understand how hardware components interact with operating systems
3. File Systems
- a. Understand the basic functions common to all file systems
 - b. Explain the file systems used by Windows 2000, Windows XP, and Windows Server 2003 (FAT15, FAT32, and NTFS)
 - c. Describe the file systems used by UNIX and Linux systems, including ufs and ext
 - d. Discuss the NetWare file system and NSS
 - e. Explain the Mac OS X Extended (HFS+) file system including new features added in Mac OS X version 10.3
4. Installing and Upgrading Operating Systems
- a. Understand the overall process of operating system installation and upgrading
 - b. Prepare for operating system installation and understand the factors involved in making the decision to upgrade
 - c. Install and upgrade the following operating systems and understand the various options presented in:
 - d. Windows 2000 Server and Professional
 - e. Windows XP
 - f. Microsoft Vista
 - g. Windows Server 2003
 - h. NetWare 6.0 and 6.5
 - i. Mac OS X
 - j. Install Red Hat Enterprise Linux 3.0 and understand the basic differences between UNIX-type installations and those of the other operating systems covered in this chapter
 - k. Demonstrate the process of upgrading from one version to the next
5. Configuring Input and Output Devices
- a. Understand how operating systems interface with input and output devices
 - b. Explain the need for device drivers and install devices and drivers
 - c. Describe the popular input device technologies
 - d. Discuss the types of printers and install printers
 - e. Explain display adapter technologies
 - f. Install circuit boards for new devices
 - g. Explain the use of sound cards and other input devices
6. Using and Configuring Storage Devices
- a. Understand basic disk drive interface technologies
 - b. Compare the different types of CD-ROM and DVD storage
 - c. Explain the differences between a storage area network (SAN) and network attached storage (NAS)
 - d. Discuss various removable storage options
 - e. Describe tape drive options and their advantages and disadvantages
 - f. Briefly discuss storage management options in different operating systems
7. Modems and Other Communication Devices
- a. Explain analog modem architecture
 - b. Use the classic Hayes AT modem command set with computer communications applications
 - c. Describe digital modem architecture for high speed communications through ISDN, cable, DSL, and satellites
 - d. Explain the basics of telephone-line data communications
 - e. Configure modem and Internet communications in different operating systems
8. Network Connectivity
- a. Explain networking basics, such as network topologies, network hardware, packaging data to transport, and how devices connect to a network
 - b. Describe network transport and communication protocols, and determine which protocols are used in specific computer operating systems
 - c. Explain how to integrate different operating systems on the same network
 - d. Describe how network and workstation operating systems are used for remote networking
9. Resource Sharing Over a Network
- a. Explain the principles behind sharing disks, files, and printers on a network
 - b. Set up accounts, groups, security, and disk and file sharing on network server operating systems
 - c. Set up disks and file sharing on client operating systems
 - d. Set up printer sharing on server and client operating systems
 - e. Discuss how network and Internet servers are used for vast information-sharing networks
10. Standard Operating and Maintenance Procedures
- a. Explain file system maintenance techniques for different operating systems
 - b. Perform regular file system maintenance by finding and deleting unused files and directories
 - c. Perform disk maintenance that includes defragmenting, relocating files and folders, running disk and file repair utilities, and selecting RAID options
 - d. Set up and perform disk, directory, and file backups
 - e. Explain how to install software for best performance
 - f. Tune operating systems for optimal performance
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Methods of Instruction:

Methods of instruction used to achieve student learning outcomes may include, but are not limited to, the following activities:

- Presentation of class lectures/discussions/demonstrations in order to clarify operating system concepts and theory
- Presentation of class lectures/discussions/demonstrations in order to clarify the principles of the usage and administration of a variety of operating systems
- Web-based/web-enhanced/online/distance learning tasks/activities to reinforce understanding of concepts related to operating system concepts and theory
- Online and Laboratory activities and application assignments in order to address areas of improvement in DirectX, OpenGL, computer problem solving, and software design
- Projects in order to facilitate and demonstrate the acquisition of skills required to administrate, install, and maintain a variety of operating systems
- Collaborative projects/cooperative learning tasks in order to encourage students to develop and apply the theory and concepts of operating systems, problem solving and team work skills

Methods of Evaluation:

Students will be evaluated for progress in and/or mastery of student learning outcomes using methods of evaluation which may include, but are not limited to, the following activities:

- Computer assignment designed to demonstrate the acquisition of operating system concepts and skills
- Quizzes/examinations designed to measure students' degree of mastery of operating system concepts and terminology
- Collaborative projects designed to demonstrate successful understanding and application of operating systems
- Computer Laboratory assignments/projects designed to clarify students' individual strengths and areas of improvement related to operating system concepts and application skills
- Final examination designed to evaluate students' overall achievement of course objectives in operating systems

Sample Assignments:

Outside-of-Class Reading Assignments

- Students will be assigned readings from the text book and from the Learning Modules on the web site.
- Every end of chapter section includes an ongoing Case Study which will be assigned.

Outside-of-Class Writing Assignments

- Student will complete an analysis of ongoing Case Studies from end of chapter exercise in the text book to apply operating systems principles.
- Apply critical thinking to a Situation Analysis scenario given in the text book.

Other Outside-of-Class Assignments

- Students will complete projects and case studies designed to implement and troubleshoot operating systems in use today.

Course Materials:

All materials used in this course will be periodically reviewed to ensure that they are appropriate for college level instruction. Possible texts include the following:

- Palmer, Michael, and Michael Walters. *Guide to Operating Systems*. Enhanced Course Technology, 2007.
- Silberschatz, A., Galvin, P., Gagne, G. *Operating System Concepts*. 8th Wiley, 2008.
- Stallings, William. *Operating Systems: Internals and Design Principles*. 7th Prentice Hall, 2011.

Codes/Dates:

CB05 MOV Transfer Status: Transfers to CSU Only (B)

CB05 NOR Transfer Status: Transfers to CSU Only (B)

CB05 RIV Transfer Status: Transfers to CSU Only (B)

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