



El Camino College
COURSE OUTLINE OF RECORD – Approved

I. GENERAL COURSE INFORMATION

Subject and Number: Computer Science 40
Descriptive Title: Introduction to UNIX and LINUX Operating Systems
Course Disciplines: Computer Science
Division: Mathematical Sciences

Catalog Description:

This course covers UNIX and LINUX operating system concepts and includes basic commands, file structures, editors, file management utilities, shell programming, process control, and remote messaging, as well as network and system administration.

Conditions of Enrollment:

You have no defined requisites.

Course Length:	X Full Term	Other (Specify number of weeks):
Hours Lecture:	3.00 hours per week	TBA
Hours Laboratory:	3.00 hours per week	TBA
Course Units:	4.00	

Grading Method: Both

Credit Status: Associate Degree Credit

Transfer CSU: X Effective Date: 05/21/2007

Transfer UC: X Effective Date: Fall 2007

General Education:

El Camino College:

CSU GE:

IGETC:

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. Given a specification for a set of operating system tasks, students will create, edit, move, display, copy and delete files and subdirectories.
2. Students use shell programming to create file processing applications and control user interaction.
3. Students create, schedule, filter, monitor, format, sort and redirect and delete input / output of programs and processes.
4. Students perform basic administration functions in system installation and maintenance, network services, user services.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below)

1. Demonstrate proficiency working with electronic mail and other network services.
2. Create, move, display, copy and delete files and subdirectories.
3. Use shell programming to create file processing applications and control user interaction.
4. Edit files with system editors.
5. Filter, format, sort and redirect input / output of programs.
6. Create, schedule, monitor and delete multiple processes.
7. Perform basic network functions, such as TCP/IP addressing for hosts, subnets, gateways, DHCP and DNS servers.
8. Perform basic system administration functions, such as operating system installation, user installation, hardware and software installation, system maintenance and system services.

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	3	I	Electronic mail and other network services A. E-mail B. Telnet C. News groups D. FTP Server
Lab	3	II	Electronic mail and other network services Lab A. E-mail B. Telnet C. News groups D. FTP server
Lecture	6	III	File and subdirectory manipulation commands A. Subdirectories and file manipulation B. Special names and wildcards C. Understanding permissions, including access and modifications

Lab	6	IV	File and subdirectory manipulation commands Lab A. Subdirectories and file manipulation B. Special names and wildcards C. Understanding permissions, including access and modifications
Lecture	12	V	Shell programming A. File processing B. System user interface C. Control Loops D. Decision statements E. Different types of shells (Bourne, Korn, C)
Lab	12	VI	Shell programming Lab A. File processing B. System user interface C. Control Loops D. Decision statements E. Different types of shells (Bourne, Korn, C)
Lecture	3	VII	System editors A. vi editor B. Emacs
Lab	3	VIII	System editors Lab A. vi editor B. Emacs
Lecture	3	IX	Filtering, formatting, sorting and redirecting program input / output
Lab	3	X	Filtering, formatting, sorting and redirecting program input / output Lab
Lecture	3	XI	Process control
Lab	3	XII	Process control Lab
Lecture	12	XIII	Networking Fundamentals A. User network interface B. Server-host schema C. Network protocols D. Network addressing E. Sub-networks F. Unix network commands
Lab	12	XIV	Networking Fundamentals Lab A. User network interface B. Server-host schema C. Network protocols D. Network addressing E. Sub-networks F. Unix network commands
Lecture	12	XV	System administration A. Operating system installation B. User management C. Hardware and software management

			D. System maintenance and services E. Configuring the kernel F. System Security
Lab	12	XVI	System administration Lab A. Operating system installation B. User management C. Hardware and software management D. System maintenance and services E. Configuring the kernel F. System Security
Total Lecture Hours		54	
Total Laboratory Hours		54	
Total Hours		108	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or non-computational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

You are given a class B IP Address of 169.33.0.0 and you need to create a network with at least 20 subnets and at least 100 hosts in each subnet. Answer the following questions (answers may vary): a) What subnet mask will you choose? b) State the IP addresses to be assigned: 1) the IP address of each subnet. 2) the IP address of the first host in each subnet. 3) the IP address of the last host in each subnet. 4) the IP address of the broadcast address in each subnet. c) How many IP addresses are in an entire subnet (including the subnet address and the broadcast address)?

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

- Give a line-by-line description of each of the following shell scripts. The first line is done as an example in each case. Print telnet windows to show what happens when they are executed. The name of the script is in parens (name.sh). These scripts are in /usr/cs40sh directory. Add additional comments as requested. (echo1.sh) 1.a) echo "cat" display cat on the screen _____ echo "tails" _____
echo "hurt" _____
(echo2.sh) 1.b) echo "cat\c" display cat, cursor on same line__ echo "tails" _____
echo "hurt" _____
Explain, in a sentence or two, why 1a differs from 1b. (echo3.sh) 1.c) echo -n "\$1" _____
echo "\$2" _____ Run echo3.sh with two words on the command line. Explain, in a sentence or two, how and why the -n option affected the output.
- Write a Shell script system called phonesys that will maintain entries in a user's phonebook. Keep track of how you designed the shell script system. What worked? What did not? What new lessons did you learn by creating phonesys? After answering these questions, write a clear and substantive paragraph describing not only how you designed your phonesys shell script system, but why you tried the things you did.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

- Other exams
- Quizzes
- Laboratory reports
- Multiple Choice
- Completion
- Matching Items
- True/False
- Other (specify): Shell programming assignments

V. INSTRUCTIONAL METHODS

- Laboratory
- Lecture

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

- Study
- Required reading
- Problem solving activities
- Other (specify)
 - Programming

Estimated Independent Study Hours per Week: 6

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Richard Blum and Christine Bresnahan. Linux Command Line and Shell Scripting Bible. 3rd ed. Wiley, 2015. (Discipline Standard)

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

Kenneth Rosen, Douglas Host, Rachel Klee, and Richard Rosinski. UNIX, The Complete Reference, 2nd ed. McGraw-Hill, 2007. (Discipline Standard)

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
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B. Requisite Skills

Requisite Skills

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification
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D. Recommended Skills

Recommended Skills

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by Gregory Scott on 10/13/1997.

BOARD APPROVAL DATE: 01/20/1998

LAST BOARD APPROVAL DATE: 11/21/2016

**Last Reviewed and/or Revised by: Edwin Ambrosio
19380**

Date: 10/13/2020