EL CAMINO COLLEGE
COURSE OUTLINE OF RECORD

I. COURSE DESCRIPTION

Course Title and Number: Computer Science 40

Descriptive Title: Introduction to UNIX and LINUX Operating Systems

Discipline: Computer Science

Division: Mathematical Sciences

Course Length: ☒Full Term ☐Other (specify):

Hours Lecture: **3** Hours Laboratory: **3** Course Units: **4**

Grading Method: ☐Letter ☐Credit/No Credit ☒Both ☐No Grade

Course Type: ☒Credit, Degree Applicable ☐Credit, Not Degree Applicable ☐Non-Credit

Transfer CSU: ☒Yes Effective Date _____ ☐No

Transfer UC: ☐Yes Approval Date _____ ☒Pending ☐No

Conditions of Enrollment:
Specify Prerequisite Corequisite, Recommended Preparation, Enrollment Limitation or None.

None

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.

II. COURSE OBJECTIVES

List the major objectives of the course. These must be stated in behaviorally measurable terms.

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

The topics should be detailed enough to enable an instructor to determine the major areas that should be covered and so that the course may have consistency from instructor to instructor and semester to semester.

Approximate Time in Hours	Major Topics
6	Electronic mail and other network services
12	File and subdirectory manipulation commands
24	Shell programming ~ File processing ~ System user interface
6	System editors
6	Filtering, formatting, sorting and redirecting program input / output
6	Process control
24	Networking Fundamentals ~ User network interface ~ Server-host schema
24	System administration ~ operating system installation ~ user management ~ hardware and software management ~ system maintenance and services

Total: 108 hours

IV . METHODS OF EVALUATION

A. CREDIT, DEGREE APPLICABLE AND CREDIT, NOT DEGREE APPLICABLE COURSES

Check the PRIMARY method of evaluation for this course.

- ☐ Substantial writing assignments
- ☒ Problem solving demonstrations (computational or non-computational)
- ☐ Skills demonstrations

A minimum of one response in the categories 1, 2, or 3 below, as applicable, is required. However, you may check all that apply.

1. Indicate the types of writing assignments used as primary or secondary methods of evaluation for this course.
   - ☐ Essay exams
   - ☐ Written homework
   - ☐ Term or other papers
   - ☐ Reading reports
   - ☐ Laboratory reports
   - ☐ Other (specify)

2. Indicate the types of problem-solving demonstrations used as primary or secondary methods of evaluation for this course.
   - ☒ Exams
   - ☒ Laboratory reports
   - ☒ Quizzes
   - ☐ Homework problems
   - ☐ Fieldwork
   - ☒ Other (specify) shell programming assignments

3. Indicate the types of skill demonstrations used as primary or secondary methods of evaluation for this course.
   - ☐ Class performance
   - ☐ Performance exams
   - ☐ Fieldwork
   - ☐ Other (specify)

4. If objective exams are also used, check all that apply.
   - ☒ Multiple choice
   - ☒ Completion
   - ☒ Matching items
   - ☒ True/false
   - ☐ Other (specify)

B. NON-CREDIT COURSE

Indicate the methods of evaluation that will be used to determine that stated objectives have been met.

V. COURSEWORK

A. TYPICAL ASSIGNMENT

Provide an example of a typical assignment. This assignment must correspond to the PRIMARY method of evaluation indicated in Section IV, Methods of Evaluation. That is, it must be a writing assignment or, if more appropriate, an assignment involving problem solving or skill demonstration.

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 what are the IP addresses for:

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)?

B. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS

Cite two specific assignments that demonstrate college-level critical thinking. (Required for degree applicable courses only.)

Example 1: 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?

2. (expr1.sh)

```
num1=5                          set variable num1=5_____
num2=15                         _____
echo "`expr $num2 + $num1`"     _____
echo "`expr $num2 - $num1`"     _____
echo "`expr $num2 \* $num1`"    _____
echo "`expr $num2 / $num1`"     _____
```

3. (while1.sh)

```
num=0                           set variable num=0_____
sum=0                           _____
while [ $num –lt 5 ]            _____
do                              _____
                num=`expr $num + 1`_____
                sum=`expr $sum + $num`_____
                echo "$num"     _____
done                            _____
echo "THE SUM OF THE FIRST\c"   _____
echo " $num INTEGERS IS $sum"   _____
```

4.

a) (ifelse1.sh)

```
echo “ENTER A NUMBER”          display the prompt_____________________
read a                         input value for a from keyboard_____________
z=`expr $a / 2`                _____________________________________
z=`expr $z \* 2`               _____________________________________
if [ $z –eq $a ]               _____________________________________
then                           _____________________________________
   echo “$a is an even number” _____________________________________
else                           _____________________________________
   echo “$a is an odd number”  _____________________________________
fi                             _____________________________________
```

b) (case1a.sh)

```
echo “ENTER A NUMBER”          display the prompt_____________________
read a                         _____________________________________
case $a in                     _____________________________________
*[a-z]*) echo “$a is not a number”;; if a contains a-z show mesg_____________
*[A-Z]*) echo “$a is not a number”;;  _____________________________
*[02468]) echo “$a is even”;;  _____________________________________
*)echo “$a is odd”;;           _____________________________________
esac                           _____________________________________
```

Run each script three times, first entering 17, then entering 50, then entering xY57. **State what happened each time and explain, in a sentence or two, why the results were different each time in a sentence or two.**

5.

(ifelse2.sh)

```
echo  "ENTER YOUR NAME"   display prompt for a name_____________
read name                input value for name from keyboard
echo  "ENTER YOUR AGE"   _____________________________________
read age                 _____________________________________
echo "$name, for a \c"    _____________________________________
if [ $age -ge 60 ]       _____________________________________
then                     _____________________________________
  echo  "SENIOR CITIZEN\c" _____________________________________
elif [ $age -ge 20 ]     _____________________________________
then                     _____________________________________
  echo "MATURE ADULT\c"  _____________________________________
else                     _____________________________________
  echo "TEENAGER\c"      _____________________________________
fi                       _____________________________________
echo ", YOU ARE VERY NICE!" _____________________________________
```

Run this script 3 times with a name and three different ages (65, 35 and 17)

when prompted. State what messages followed in each case. **Explain why the messages were different in each case.**

Example 2:

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.**

The format of the phonebook records will be:
name:phone# (same as in lab04)
When phonesys is typed at the UNIX prompt, the user will be prompted for the name of his/her phonebook:

What is the name of your phonebook? Mybook

Then a menu of choices will appear similar to below:

Phone book system

1) add an entry
2) delete an entry
3) list file or entry
4) change entry
5) exit system

What is your choice?

For choice=1 (add), the system will prompt the user to enter
the name and phone number of the new entry, similar to below:

Enter name to add
John Doe (<- type by user)
Enter phone number to add
555-2345 (<-typed by user)

The added entry would be "John Doe:555-2345"

Would you like to add another?

For choice=2 (delete), the system will prompt the user to enter the name:

Enter name to delete:
John Doe (<- type by user)
3:John Doe:555-2345
4:John Doe:222-1111
Which line will be deleted? 4
John Doe:222-1111 has been deleted!

Would you like to delete another?

For choice=3 (list), the system will display a submenu similar to below:

1) list entry
2) list file

For subchoice=1, prompt the use for the name to list:

Enter name to list: John Doe
John Doe:555-2345 (<- entry listed by the system)
John Doe:222-1111 (<- entry listed by the system)

For subchoice=2, the entire file will be listed with a pause after each screen using more. Give use instructions how to page back and forth in the file listing.

For choice=4 (change), the system will prompt the user to enter the name, then prompt for changing the name or changing the number:

Enter name to change: John Doe
3:John Doe:555-2345
4:John Doe:222-1111
Which line will be changed? 4
1) change name
2) change number
Please make a choice? 1
What is new name? John Dope
The new entry is John Dope:222-1111
or
Please make a choice? 2
What is the new number? 333-4444
The new entry is John Doe:333-4444

Would you like to change another?

After a choice(1,2,3 or 4) has been processed, display the prompt:

Press enter for main menu

For choice=5, phonesys will terminate.

C. WORK OUTSIDE OF CLASS

Two hours work outside of class are required for each hour of lecture or equivalent. Each student in this course will be required to participate in the following work outside of class time. Check all that apply.

- ☒ Study
- ☐ Answer questions
- ☐ Skill practice
- ☒ Required reading

☒Problem solving activity
☐Written work (such as essay/composition/report/analysis/research)
☐Journal (done on a continuing basis throughout the semester)
☐Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting)
☐Course is lab only - minimum required hours satisfied by scheduled lab time
☐Other (specify)

VI. INSTRUCTIONAL METHODOLOGY

A. Check all planned instructional activities that apply:

☒Lecture	☐Group Activities
☒Lab	☐Role play/simulation
☐Discussion	☐Guest Speakers
☐Multimedia presentations	☐Field trips
☐Demonstration	☐Other (specify)

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, instructional delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VII. TEXTS AND MATERIALS

If multiple selection is offered, only representative texts need be listed. An up-to-date list of required and recommended materials is maintained in the division office.

A. REQUIRED TEXTS (title, author, publisher, year)

Guide to UNIX Using Linux, 3rd Edition, Michael Palmer, Course Technology Thomson Learning, 2005

B. REQUIRED SUPPLEMENTARY READINGS

C. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

If this course has a Prerequisite or Corequisite, complete section A. If this course has an Enrollment Limitation complete section B.

A. PREREQUISITE AND/OR COREQUISITE

1. Indicate if this course has a prerequisite or corequisite or both.
   ☐Prerequisite ☐Corequisite ☐Both

2. Indicate Type. Check all that apply.

   ☐Sequential ☐Computational/Communication Skills
   ☐Health and Safety ☐Non-Course
   ☐Standard (If this is a Standard prerequisite or corequisite, attach CCC Form D.)

3. Entrance Skills/Knowledge
   List the required skills and/or knowledge without which a student would be highly unlikely to receive a grade of A, B, C, or Credit (or for Health and Safety, would endanger self or others) in this course.

B. ENROLLMENT LIMITATION

1. Indicate the category which describes the Enrollment Limitation for this course.
   - ☐ Band/Orchestra
   - ☐ Theater
   - ☐ Speech
   - ☐ Chorus
   - ☐ Journalism
   - ☐ Dance
   - ☐ Intercollegiate Athletics
   - ☐ Honors Course
   - ☐ Blocks of Courses
   - ☐ Other (specify)

2. List Degree and/or Certificate requirements that are met by this course.

3. List all El Camino College courses that also satisfy the requirements listed above in Section B.2.

Originator: Gregory Scott Submittal Date: October 13, 1997

BOARD APPROVAL DATE: January 20, 1998

Reviewed and/or Revised by:

Gregory Scott Date: March 15, 2007

_____ Date: _____

_____ Date: _____

REQUIRED SIGNATURES FOR NON-CREDIT COURSE

College Curriculum Committee Chair

_____

Vice-President - Academic Affairs

_____