SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Systems Management I

CODE NO. :   CSO200   **SEMESTER:**   Fall 2006

PROGRAM: Computer Studies

AUTHOR: Fred Carella

DATE: Fall 2006   **PREVIOUS OUTLINE DATED:**   Fall 2005

APPROVED:

_____   _____
                                    DEAN   **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S):   CSO105

HOURS/WEEK: 4

Systems Management I   CSO200

I.   COURSE DESCRIPTION:
This course introduces the student to the Linux Operating system with particular emphasis on command line tools, utilities and shell scripting. The student will learn and apply the various commands and utilities related to file system management, process management, program development and data processing. In addition the student will learn about shell concepts and become proficient in the use of shell features such as command line editing and learn and apply Unix concepts such as pipes and filters. The student will apply the aforementioned utilities and concepts in the writing of shell scripts.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1.   **Discuss the history and development of the Linux Operating System.**
     Potential Elements of the Performance:
     - Describe the relationship between GNU and Linux.
     - Describe the relationship between Linux and Unix.
     - Discuss features which make Linux a viable and popular operating system.
     - Describe various operating system concepts such as multitasking, virtual memory and multiuser environments as they apply to Linux.
2.   **Work within a command line environment.**
     Potential Elements of the Performance:
     - Log in, from a terminal, a virtual terminal and remotely.
     - Log out.
     - Work with the shell and learn shell features such as command line editing.
     - Access the various help systems.
3.   **Describe and apply various command line utilities.**
     Potential Elements of the Performance:
     - Describe and apply various file related commands
       - List the names of files
       - Display the contents of a file.
       - Delete a file.
       - Copy a file.
       - Move a file.
       - Print a file.
       - Search the contents of a file.
       - Pack and Unpack files (archiving).
       - Find files.

- Describe and apply various utilities
  - Display text.
  - Display time and date.
  - Test for a files contents.
  - Obtain user information.
  - Communicate with other users.

4. **Work with the file System.**
   Potential Elements of the Performance:
   - Describe hierarchical file systems.
   - Create and delete directories.
   - Understand and apply knowledge of absolute and relative pathnames when specifying files.
   - Describe the standard file and directory layout.
   - Describe the various file types.
   - Create and delete hard and soft (symbolic) links.
   - Create and modify file permissions.

5. **Work with shells.**
   Potential Elements of the Performance:
   - Understand how the command line is parsed and processed.
   - Understand the concept of standard input and output.
   - Understand and apply I/O redirection.
   - Understand and apply the concepts of pipes and filters.
   - Manipulate the directory stack.
   - Understand the concept of shell parameters and variables.
   - Create, view and delete shell variables.
   - Understand how processes are created and their attributes.
   - Create foreground and background processes.
   - Create, view and delete processes.
   - Work with shell history.
   - Understanding the readline library and its features as applied to command line editing.
   - Understand how shells are started and view/modify the shell configuration files.
   - Create, modify and delete aliases.
   - Create and execute simple shell scripts.
   - Create and use functions.

6. **Write shell scripts.**
   Potential Elements of the Performance:
   - Understand and apply the following concepts and features to the writing of shell scripts:
     - Flow Control structures:
       - if…then…else
     - Looping Control structures:

- for … in
- for…
- while…
- until…
  - Menu Control Structures:
    - select…
  - The "here" document
  - Arrays.
  - Special parameters.
  - Positional parameters and shifting.
  - Expressions.
  - Operators.
  - Pattern matching.

7. **Data Processing Utilities.**
   Potential Elements of the Performance:
   - Process files using gawk
   - Process files using sed
8. **Programming in C**
   - Write a simple C program
   - Compile and run a C program
   - Understand the "make" utility and create a makefile to build a program.
   - Create and use shared libraries.

III.   TOPICS:

1. Introduction to the Linux Operating System.
2. The Linux Command Line.
3. Command Line Utilities.
4. The File System.
5. Working with Shells.
6. Writing Shell Scripts.
7. Data Processing Utilities.
8. Programming in C

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:
Textbook:

A Practical Guide to Linux, Commands Editors and Shell Programming.

Mark G Sobell,
Prentice Hall,
ISBN: 0-13-147823-0

Bash Guide for Beginners
http://www.tldp.org/LDP/Bash-Beginners-Guide/html/index.html

Advanced BASH Scripting Guide:
http://www.tldp.org/LDP/abs/html/

V.   EVALUATION PROCESS/GRADING SYSTEM:

Tests:

Topics 1-3 – 20%
Topics 4-6 – 30%
Topics 7-8 – 10%

Labs:

            40%
        100%

The following semester grades will be assigned to students in this course:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 - 59%	1.00
F (Fail)	below 50%	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded	

	subject area.
X	A temporary grade limited to extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

ATTENDANCE:

Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances should be discussed with the instructor. If attendance is poor, eligibility for an X-grade is forfeited.

VI.   SPECIAL NOTES:

Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 2493 so that support services can be arranged for you.

Retention of Course Outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

A student must achieve a passing in grade in **BOTH** the lab and lecture (tests) portions in order to pass the course.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII.   DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.