

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: Introduction to Linux

CODE NO. : CSO102 **SEMESTER:** 2

PROGRAM: IT Studies

AUTHOR: Fred Carella

DATE: Winter 2015 **PREVIOUS OUTLINE DATED:** Winter 2013

APPROVED: "Colin Kirkwood" Dec/15

DEAN **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): NA

HOURS/WEEK: 4

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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. **Perform System Administration Tasks**Potential Elements of the Performance:

- Install Linux
- Gain root
- Understand and control the startup sequence (systemd)
- Start, stop, restart services
- Enable/disable services at startup
- Shutdown a system
- Use system administration tools to monitor and maintain a system
- Install and configure software
- Install and configure services
- Update the Operating System

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. Perform System Administration Tasks

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

A Practical Guide to Fedora and Redhat Enterprise Linux
7th Edition
Mark G. Sobell
ISBN 978-0-13-347743-6

<https://sites.google.com/site/saultcollegeit/courses/cs0102-winter-2011/new-curriculum-2013>

V. EVALUATION PROCESS/GRADING SYSTEM:

Topics 1-3 – 20%

Topics 4-6 – 30%

Topics 7 – 10%

Labs:

40%
100%

Note a passing grade in both the test and lab portion is required to pass the course.

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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 situations with 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.

VI. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

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. Students are required to be in class on time and attendance will be taken within the first five minutes of class. A missed class will result in a penalty in your marks unless you have discussed your absence with the professor as described above. The penalty depends on course hours and will be applied as follows:

Course Hours	Deduction
5 hrs/week (75 hrs)	1% / hr
4 hrs/week (60 hrs)	1.5% /hr
3 hrs/week (45 hrs)	2% /hr
2 hrs/week (30 hrs)	3%/hr

Absentee reports will be discussed with each student during regular meetings with Faculty Advisors. Final penalties will be reviewed by the professor and will be at the discretion of the professor.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.