



**I. COURSE DESCRIPTION:**

This course introduces the CICE student to the Linux operating system with particular emphasis on command line tools and utilities and shell scripting. The CICE student, with assistance from a Learning Specialist, will learn and apply the various commands and utilities related to file system management, process management, program development and data processing. In addition, the CICE 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 CICE student, with assistance, 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 CICE student, with the help of a Learning Specialist, will demonstrate the basic 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

Web Site:

[https://sites.google.com/site/saultcollegeit2/home/courses/cso0102\\_introduction-to-linux\\_01\\_16w](https://sites.google.com/site/saultcollegeit2/home/courses/cso0102_introduction-to-linux_01_16w)

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Topics 1-3 – 20%

Topics 4-6 – 30%

Topics 7 – 10%

**Labs:**

40%  
100%

All tests and assignments will be completed with the assistance of the Learning Specialist. Any modifications to the tests and assignments will be proposed by the Learning Specialist and are subject to approval from the professor

*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:

<b>Grade</b>	<b><u>Definition</u></b>	<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.

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

## 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. 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:

<b>Course Hours</b>	<b>Deduction</b>
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 in D2L and on the portal form part of this course outline

**CICE Modifications:****Preparation and Participation**

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

**A. Tests may be modified in the following ways:**

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

**B. Tests will be written in CICE office with assistance from a Learning Specialist.*****The Learning Specialist may:***

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

**C. Assignments may be modified in the following ways:**

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

***The Learning Specialist may:***

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

**D. Evaluation:**

Is reflective of modified learning outcomes.