

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE:	Advanced Linux		
CODE NO. :	CSO203	SEMESTER:	4
PROGRAM:	IT Studies		
AUTHOR:	Fred Carella		
DATE:	Winter 2012	PREVIOUS OUTLINE DATED:	Winter 2011
APPROVED:	"Brian Punch"		Dec/11
	<hr/>		<hr/>
	CHAIR		DATE
TOTAL CREDITS:	4		
PREREQUISITE(S):			
HOURS/WEEK:	4		

Copyright ©2012 The Sault College of Applied Arts & Technology
Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.
For additional information, please contact Brian Punch, Chair
Environment/Design/Business
(705) 759-2554, Ext. 2681

I. COURSE DESCRIPTION:

Linux is the fastest growing operating system. As the number of companies implementing Linux increases, so too does the rapidly-developing need for skilled users, developers and administrators. Advanced Guide to Linux Networking and Security was especially designed for individuals who want to move beyond just the basics of Linux installation and administration into a broader study of the many security issues surrounding this operating system. The text maps to the objectives for the second exam in the LPI/LCA certification.

It develops skills in typical systems management tasks including installation, upgrading, system configuration, security, backups, performance tuning, system monitoring and account management.

The operating system to be used is CentOS/Redhat Enterprise however the skills learned are generic enough to be transferable to other distributions.

This is the second of two courses in Linux which will develop the students ability to use and manage various operating systems (CSO 102 was the first course).

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Install and configure a Linux distribution

Potential Elements of the Performance:

- understand and discuss the following
 - what is Linux
 - the components make up a Linux distribution
 - Fedora Core Linux
- perform the following procedures
 - Install Fedora Core
 - pre installation research
 - create an installation checklist
 - choose an installation class
 - choose an installation method (nfs, ftp, http, smb,

cdrom)

- install
 - prepare and partition hard drives
 - choose a boot loader
 - create boot floppies
 - install it.
 - startup and shutdown properly
 - post installation procedures
 - keyboard configuration

sound configuration

2. Perform System Administration

Potential Elements of the Performance:

- Update and Upgrade Fedora Core Linux
 - update the system using different methods.
 - update using Fedora Core Update
 - update with “yum” and “apt”
 - upgrade the System
- Manage Services
 - start and stop services
 - configure boot time services
 - understand and manipulate run-levels
- Manage Software Resources
 - understand software distribution, the Open Source Model and the Redhat Package Manager (RPM)
 - use command line RPM
 - use GUI RPM tools
 - install, remove, upgrade software packages.
 - understand binary versus source application software distribution and how to build and install software distributed as a “tarball” and as an “SRPM”.
 - understand and apply software updates using YUM and APT
- Manage Users.
 - define users
 - define user accounts and their attributes
 - understand passwords and security issues.
 - Add/modify/delete accounts using command line and GUI tools.
- Manage File Systems.
 - understand devices in general and disks in particular.
 - manipulate partitions using various command line tools
 - create devices using mkknod
 - understand filesystems.
 - compare and contrast various filesystems available in linux.

- create file systems.
 - Interact with other vendor file systems (Windows FAT, VFAT, NTFS)
 - understand and manipulate /etc/fstab, the file system table.
 - Mount and unmount filesystems.
 - Backup and Restore and Recovery
 - understand backup strategies.
 - become aware of various hardware and backup media
 - use various backup and restore software including some but not all of
 - tarball
 - cpio
 - dump and restore
 - ark
 - dd
 - Amanda
 - commercial software
 - Recovery
 - backup and restore the MBR
 - boot from rescue CD
 - boot from generic boot floppies
 - installation disk recovery procedures
3. System Services
- Potential Elements of the Performance:
- understand the lpd system and /etc/printcap
 - configure client printing services using GUI tools.
 - Configure Network Connectivity
 - Use gui tools to configure
 - Subnets
 - Addressing
 - network devices
 - dhcp
 - Configure various network file systems including
 - nfs
 - samba (smb)
 - Understand and Configure DNS services
 - Configure Apache Web Server Software
 - Configure database servers in particular MySQL
 - Configure FTP services

III. TOPICS:

1. Linux installation and configuration

2. System administration
3. System services

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Advanced Guide to Linux Networking and Security, 1st Edition

Ed Sawicki

Textbook ISBN-10: 1-4188-3539-0

Textbook ISBN-13: 978-1-4188-3539-2

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests:

Installation	10%
System Administration	25%
System Services	25%

Labs:

Linux	30%
Linux Practical Test(s)	<u>10%</u>
<i>Total</i>	<i>100%</i>

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%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	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 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.