SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Systems Management II
Linux Administration

CODE NO. :   CSO201   **SEMESTER:**

4

PROGRAM: Computer Studies

AUTHOR: Fred Carella

DATE: Jan 2005   **PREVIOUS OUTLINE DATED:**   Jan 2004

APPROVED:

_____   _____
                                                                          DEAN   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S):   CSO200

HOURS/WEEK:

4

System Management II _____   CS0201
Course Name   Course Code

I. COURSE DESCRIPTION:

This course prepares the technician for installing and managing operating systems. It develops skill in typical systems management tasks including installation, upgrading, system configuration, security, backups, performance tuning, system monitoring and account management.

The operating systems used will be primarily LINUX and SOLARIS (UNIX). This is the second of two courses in systems management which will develop the students ability to use and manage various operating systems (CSO 200 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
    <u>Potential Elements of the Performance:</u>

- understand and discuss the following
    - o what is Linux
    - o the components make up a Linux distribution
    - o Redhat Linux
    - o Slackware Linux
    - o Solaris
- perform the following procedures
    - o Install Redhat
    - o pre installation research
        - create an installation checklist
        - choose an installation class
        - choose an installation method (nfs, ftp, http, smb, cdrom)
- install
    - o prepare and partition hard drives
    - o choose a boot loader
    - o create boot floppies
    - o install it.
    - o startup and shutdown properly
    - o post installation procedures
        - keyboard configuration
        - sound configuration

System Management II   CS0201
Course Name   Course Code

2.   Perform System Administration
     <u>Potential Elements of the Performance</u>:
     - Update and Upgrade Redhat Linux
     - update the system using different methods.
     - update using Redhat Update
     - upodate 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 mknod
     - 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

System Management II   CS0201
Course Name   Course Code

- 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

System Management II

CS0201

Course Name

Course Code

4. Programming and Productivity Tools
    Potential Elements of the Performance:
    - become aware of and use to a limited degree
    - the C/C++ compiler suite (gcc)
    - build tools (make, autoconf)
    - debugging tools
    - shell scripting
    - perl
    - understand the kernel and the need for rebuilding a kernel
    - configure a kernel
    - build a kernel
    - build modules
    - install above kernels
    - Productivity Applications.
    - Become familiar with various productivity tools, in particular those which come with Gnome (stock and Ximian GNOME) and Open Office.

III.   TOPICS:

1. Linux installation and configuration
2. System administration
3. System services
4. Programming and Productivity

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

Text: Redhat Fedora 2
       Author: Bill Ball, et al.
       Publisher: SAMS (Copyrighted 2005)
       ISBN: 0-672-32721-x

Other recommended texts are
       Using LINUX, Special Edition
       QUE. Books

       Fedora Core 2(download and install the iso's).

System Management II
Course Name

CS0201
Course Code

Internet Resources

1. The redhat Documentation available at http://www.redhat.com

2. The Linux Documentation Project web site at
the following URL.:
http://metalab.unc.edu/mdw/linux.html

V. EVALUATION PROCESS/GRADING SYSTEM:

The mark for this course will be arrived at as follows:

Tests:

Installation	10%
System Administration	25%
System Services	25%

Labs:

Linux/Solaris	30%
Linux Practical Test(s)	10%
Total	*100%*

NOTE** A passing grade in both the Test and Lab portion is required in order to pass the course.

The following semester grades will be assigned to students in postsecondary courses:

Grade	Definition	*Grade Point Equivalent*
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.

System Management II   CS0201
Course Name   Course Code

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 professor and/or the Special Needs office. Visit Room E1101 or call Extension 493 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.

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.

System Management II

Course Name

CS0201

Course Code