SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	**Introduction to Operating Systems and LAN**
CODE NO. :	**CSO104** **SEMESTER:** **3**
PROGRAM:	**IT Studies**
AUTHOR:	**Fred Carella**
DATE:	**Sep 2012** **PREVIOUS OUTLINE DATED:** **N/A**
APPROVED:	"Brian Punch" Aug/12
	_____ _____
	CHAIR **DATE**
TOTAL CREDITS:	**5**
PREREQUISITE(S):	**None**
HOURS/WEEK:	**60 Hours Total – 5 hours per week**

Intro to OS and LAN   ___CSO104___
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I.   COURSE DESCRIPTION:

This course will introduce the student to the use of operating systems from both the client and server point of view.

The first section of this course is dedicated to familiarizing students with SaultCollege's computing infrastructure regarding security and terms-of-use policies, login/logout procedures, disk storage access and quota, internet and email usage. Client operating systems will be installed, in particular, Microsoft Windows 7 Professional, and will be configured to interact in a domain environment.

In the second section of the course, students will be introduced to Network Operating Systems.   Windows Server 2008 will be used as the network operating system of study. Developing practical skills in LAN (Local Area Network) installation, administration, file permissions, firewalls, and troubleshooting are important objectives of this course.   In addition, DNS Server (Domain Name Service) and Network Printing services will be installed and configured.

Microsoft Windows 2008 Server will be the primary learning tool used.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1.   **Work with Sault College's Network and the Internet**
     <u>Potential Elements of the Performance:</u>
     - Read and abide by Sault College's policy on computer usage: http://student.saultcollege.ca/ComputerLabs.asp
       Understand and effectively use the Sault College lab and data environment: http://student.saultcollege.ca/ComputerLabs.aspm
     - Map to Distro, AIT, and Student Data Files
     - Understand the purpose of, utilization, and manipulation of folders (or directories), sub-folders or sub-directories; absolute and explicit paths: http://en.wikipedia.org/wiki/Path_(computing)
     - Explore fundamental Internet concepts and protocols: http://en.wikipedia.org/wiki/Internet_Protocol
     - Work with Internet browser software application(s): http://en.wikipedia.org/wiki/List_of_web_browsers
     - Understand the purpose and components of URLs: http://en.wikipedia.org/wiki/Uniform_Resource_Locator
     - Identify common web sites and utilities: Google Apps, Gmail, Facebook, Chrome, etc.
     - Identify and use Search Engines effectively: http://www.learnwebskills.com/search/engines.html
     - Work with File Transfer Protocol in the GUI and CLI environment: http://en.wikipedia.org/wiki/File_Transfer_Protocol
     - Use FileZilla to apply FTP
     - Identify email protocols: http://en.wikipedia.org/wiki/Internet_Message_Access_Protocol
     - Learn email etiquette: http://www.enough.utoronto.ca/computeruse/eetiquette.htm
     - Configure your mailbox including mail server entries: http://support.microsoft.com/kb/287532
     - Send, receive, reply, forward and copy e-mail
     - Send, receive, forward and copy e-mail attachments
     - Apply CC and BCC e-mail addressing
     - Understand the purpose of a listserv: http://en.wikipedia.org/wiki/Electronic_mailing_list
     - Use Web Mail
     - Understand the purpose of and organize email folders
     - Incorporate email constructs such as distribution lists, calendar entries and signatures: http://en.wikipedia.org/wiki/Filename_extension
     - Understand fundamental concepts related to Internet telecommunications: http://en.wikipedia.org/wiki/Telecommunication

2. **Define and apply Operating System theories and concepts**
   Potential Elements of the Performance:
   - Learn the component pieces of a computer system and the operating system's relevant roles and responsibilities:
     http://www.howstuffworks.com/pc.htm
   - Learn how operating systems are classified based on the number of users and tasks that execute simultaneously:
     http://en.wikipedia.org/wiki/Operating_system
   - Learn the significance of the binary representation of bits, bytes, and words.
   - Understand the significance of the ascii, ebcdic, and Unicode character set representation:
     http://en.wikipedia.org/wiki/Character_encoding

   - Learn the concepts of kernel, shell, process, program execution, input / output operations, communications, error detection, and memory management:
     http://en.wikipedia.org/wiki/Operating_system
   - Differentiate between the following: 32 bit vs 64 bit system, Windows OS vs Unix OS:
     http://www.techsupportalert.com/content/32-bit-and-64-bit-explained.htm
     http://windows.microsoft.com/en-CA/windows-vista/32-bit-and-64-bit-Windows-frequently-asked-questions
     http://en.wikipedia.org/wiki/Comparison_of_Windows_and_Linux
   - Understand concepts such as preemptive multitasking, virtual memory, and virtual machine:
     http://en.wikipedia.org/wiki/Preemption_(computing)
     http://www.howstuffworks.com/virtual-memory.htm
     http://www.webopedia.com/TERM/V/virtual_machine.html
   - Explore the fundamentals of secondary storage covering: disks, sectors, tracks, cylinders, platters, partitions, the master boot record, and the boot process:
     http://en.wikipedia.org/wiki/Disk_storage
     http://en.wikipedia.org/wiki/Disk_partitioning

3. **Utilize Microsoft Windows 7 Professional
   (see http://windows.microsoft.com/en-CA/windows7/help)**
   Potential Elements of the Performance:
   - Study the history of Windows operating systems
   - Identify and utilize Windows desktop components
   - Identify the component parts of a Window and their purpose
   - Understand the significance of the Start button and menu
   - Utilize the on-line Help features availed by the GUI

- Identify and apply proper shutdown and log-off procedures
- Create shortcuts on the desktop
- Understand Windows file naming conventions
- Effective use of various dialogue techniques
- Differentiate between various file types: system, data and executable
- Copy, move, edit and delete files using My Computer, Windows Explorer; and cut, copy, paste techniques
- Understand and implement effective use of the Recycle Bin.
- Understand, view, and modify file and folder attributes
- Identify and utilize available disk drives
- Identify and differentiate between various file systems used by Windows - FAT and NTFS
- Understand the theory and purpose of formatting a disk.
- Differentiate between system, non-system, and recovery disks
- Develop effective use of Windows Search capabilities
- Develop contextual awareness of the purpose of the Windows Registry
- Develop awareness for the purpose of a Restore Point
- Develop awareness of Windows memory allocation and utilization
- Differentiate between Internal and External commands, and the concept of Path to locate external commands
- Understand the concept of Multi-tasking in Windows
- Determine how to access the Command Line interface

4. **Introduction To Network Operating Systems**
   Potential Elements of the Performance:

- Learn the structure of a Network Operating System environment
- Identify the major Network Operating Systems in the workplace
- Compare certifications of each Network Operating System
- Compare pricing, support, and past / current / future market share
- Contrast the difference between Peer-LAN and Client / Server
- Identify the 4 Microsoft Windows 2008 Server software types
- Learn Domain modeling with introduction to Domain Controllers, Trees and Forests
- Configure a Peer-LAN network using your Windows XP system

5. **Install and configure a Windows Network Server**
   Potential Elements of the Performance:

- Download Windows 2008 Server source files from the ELMS site
- Create a VMWare image

- Identify the startup location and executable file for the 2008 Server install
- Differentiate between Standalone, Member Server or Domain Controller
- Contrast Computer Name, Domain Name, and DNS Naming structure
- Install a Windows 2008 Server on a VMWare Virtual Machine
- Login to 2008 Server and create a backup Administrator account
- Configure TCP/IP to access the network and Internet
- Lockdown Windows 2008 Server using a Firewall, Anti-Virus and Service Pack updates
- Install a DNS Server in preparation for Network Name Resolution
- Configure DNS and WINS for 'User' and 'Computer' locating on the Network
- Create 'Hosts' and 'lmhost' files for Name Resolution

6.   **Administer a Windows Server (Users and Groups)**
     Potential Elements of the Performance:

     - Explore the 'Computer Management' tool
     - Work with Active Directory in preparation for a Domain-Based install
     - Install Active Directory and convert to a Domain Controller
     - Work with 'Active Directory Users and Computers' tool
     - Create User Accounts
     - Create Domain Local Groups
     - Add Users to Groups

7.   **Administer Windows 2008 Server (Shares, Folders and Files)**
     Potential Elements of the Performance:

     - Explore Share Level Permissions
     - Contrast NTFS vs FAT in a Windows 2008 Server environment
     - Apply and test Shares / Folders and File Permissions in an NTFS-based environment using hands-on business lab examples

8.   **Implement Group Policy**
     Potential Elements of the Performance:

     - Compare Policies VS Profiles
     - Contrast Local and Group policies
     - Work with the Window Domain and Domain Controller Group Policies
     - Learn the hierarchy of Policy ordering and execution
     - Contrast then create Local and Roaming profiles
     - Understand the flow of Roaming profiles
     - Implement Group Policies to restrict user accessibility on the Network
     - Learn how to map drives and re-direct folders using Group Policy

9.   **Manage Printing Services**
     Potential Elements of the Performance:

     - Install, configure and secure Printing Services for Windows 2008 Server
     - Install and share a Network-based Printer
     - Test printing services for both Server and Client

10. **Create Backup Strategies and Disaster Recovery Plans**
     <u>Potential Elements of the Performance</u>:

- Learn various backup methods and schedules
- Work with file 'Archive' bit for backups and restores
- Perform Volume backups
- Research Storage Area Networks
- Learn about off-site backups and data backup integrity testing

III.   TOPICS:

SPECIFIC TOPICS	APPROXIMATE TIME (Weeks)
Work with Sault College's network and the internet	1
Define and apply operating system theories and concepts	1
Utilize Microsoft Windows 7 Professional	1
Introduction To Network Operating Systems	1
Install and configure a Windows Network Server	2
Administer a Windows Server (Users and Groups)	2
Administer Windows Server (Shares, Folders, Files)	2
Implement Group Policy	2
Manage Printing Services	1
Create Backup Strategies and Disaster Recovery Plans	2

IV.   REQUIRED RESOURCES / TEXTS / MATERIALS:

Web: All web references for this course will be posted on LMS

Handouts: Regular handouts will be distributed accordingly in class

Textbook Title: Hands-On Microsoft Windows 2008 Server

Author: Palmer

Publisher: Course Technology
ISBN: 1423902343 or 9781423902348

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V.   EVALUATION PROCESS/GRADING SYSTEM:

Tests (3 Tests – 1 every 5 weeks)	40%
Computer Labs	30%
Quizzes	20%
Attendance	10%

Some minor modifications to the above percentages may be necessary. The professor reserves the right to adjust the mark based upon leadership, creativity and whether there is an improving trend. Students must have passing grades in the tests/quizzes and assignments portion to pass the entire course.

*   Students must complete and pass the tests and assignment portion of the course in order to pass the entire course.

*   All Assignments must be completed satisfactorily to complete the course. Late hand in penalties will be 5% per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.

*   The professor reserves the right to adjust the number of tests, practical tests and quizzes based on unforeseen circumstances. The students will be given sufficient notice to any changes and the reasons thereof.

*   A student who is absent for 3 or more times without any valid reason or effort to resolve the problem will result in action taken.

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The following semester grades will be assigned to students:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	
A	80 – 89.9%	4.00
B	70 – 79.9%	3.00
C	60 – 69.9%	2.00
D	50 – 59.9%	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 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:
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 professor. 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 Mentors. 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.