SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	Computer Hardware and Networking		
CODE NO. :	CST104	**SEMESTER:**	15W
PROGRAM:	Computer Programmer		
AUTHOR:	Mark Allemang		
DATE:	Jan-2015	**PREVIOUS OUTLINE DATED:**	Jan 2014
APPROVED:	"Colin Kirkwood"		Dec 2014
	DEAN		**DATE**
TOTAL CREDITS:	4		
PREREQUISITE(S):	CSO104		
HOURS/WEEK:	4		

I. COURSE DESCRIPTION:

This course provides an overview of computer hardware and networking. The hardware components of a typical computer system will be studied as well as the system level software such as the operating system and device drivers. The basics of networking will be studied and the student will build a network both wired and wireless and share resources across it. Experiments with network communication encryption will be performed. Topics in mobile and cloud computing will also be covered.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. **Identify and describe the basic function of all major components found inside a typical computer.**

   Potential Elements of the Performance:

   - Identify and describe the uses of various PC cases and power supplies
   - Describe the nature of electricity and power including ohms law.
   - Identify PC ports and cables
   - Identify various input/output devices and motherboard components
   - Explain system resources and their purpose
   - Assemble and disassemble computers

   This outcome constitutes approximately 20% of the course.

2. **Connect and configure various peripheral devices**

   Potential Elements of the Performance:

   - Describe the nature of various types of devices such as printers, scanners, cameras, mobile devices.
   - Identify the various interface types used with these devices such as USB, Fire Wire Bluetooth, WIFI, RS232.
   - Configure the devices and their interfaces

   This outcome constitutes approximately 15% of the course.

3. **Connect and configure mobile devices**

Potential Elements of the Performance:

- Describe the nature of a typical mobile device such as a smartphone or tablet.
- Configure the device to function in a networked environment
- Configure a basic development environment and develop an app for the device.

This outcome constitutes approximately 10% of the course.

4. **Describe network principles, standards and purposes and build a network.**

Potential Elements of the Performance:

- Explain the principles of networking and the various types of networks
- Identify standards organizations and describe the OSI and the TCP/IP model for networks
- Describe LAN topologies and architectures
- Identify Ethernet standards and construct an Ethernet cable
- Compare and contrast Enterprise vs small wireless network standards
- Utilize various network devices such as NIC, switch, router, wireless access point, media to build a network and share resources across the network
- Utilize various software tools to test and troubleshoot networks.

This outcome constitutes approximately 35% of the course.

5. **Explain the importance of security and describe the techniques used to secure data**

Potential Elements of the Performance:

- Describe various security threats and how to mitigate them
- Describe the concept of Encryption and symmetric (shared secret) vs Asymmetric (public/private key) encryption and how it can be used to secure data transfer
- Describe how a firewall is used to secure a network
- Explore other topics in security such as digital signatures and

VPNs.

This outcome constitutes approximately 10% of the course.

6. **Describe the nature of cloud computing and the various methods used to implement it**

Potential Elements of the Performance:

- Describe the meaning of software as a service, platform as a service and Infrastructure as a service.
- Given a particular computing requirement, recommend the appropriate solution
- Work within a cloud environment such as Google Drive/apps or Microsoft Skydrive.

This outcome constitutes approximately 10% of the course.

III. TOPICS:

1. Computer hardware and system software
2. Peripheral Devices
3. Mobile Devices
4. Networking Essentials
5. Network, system and communication security.
6. Cloud Computing

IV. REQUIRED RESOURCES / TEXTS / MATERIALS:

All curriculum is provided for the student via LMS and or Internet references. The student will need a blank USB storage device (4Gig minimum).

V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation Methods	Weight
Tests	50%
Lab Assignments	50%

The professor reserves the right to adjust the mark up or down based on attendance, participation, leadership, creativity and whether there is an improving trend.

- Students must complete and pass both the test and lab portion of the course in order to pass the entire course.
- All Assignments must be completed satisfactorily to complete the course.
- Makeup Tests are at the discretion of the instructor and will be assigned a maximum grade of 50%.
- 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.

NOTE: If action is to be taken, it will range from marks being deducted to a maximum of removal from the course.

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

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

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

The following semester grades will be assigned to students:

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.

VI. SPECIAL NOTES:

Upgrading of Incompletes:
When a student's course work is incomplete or final grade is below 50%, there is the possibility of upgrading to a pass when a student meets all of the following criteria:

1. The student’s attendance has been good.
2. An overall average of at least 45% has been achieved by semester’s end.
3. The student has made reasonable efforts to participate in class and maintain the recommended schedule for assigned activities.

The nature of the upgrading requirements will be determined by the instructor and may involve re-testing and/or additional lab assignments

VII. COURSE OUTLINE ADDENDUM:

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