SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	Cisco (CCNA) Certification III		
CODE NO. :	**CSN309**	**SEMESTER:**	**3 and 4**
PROGRAM:	**Computer Network Technician**		
AUTHOR:	**Mark Allemang**		
DATE:	**Nov, 2009** **PREVIOUS OUTLINE DATED:**		**Nov. 2008**
APPROVED:	"B. Punch"		
	_____		_____
	Chair		**DATE**
TOTAL CREDITS:	**5**		
PREREQUISITE(S):	**CSN209**		
HOURS/WEEK:	**6 (for 10 weeks)**		

I.   COURSE DESCRIPTION:

This course continues the preparation for certification in the Cisco Certified Networking Associate (CCNA) program. The primary focus of this course is on LAN switching and wireless LANs. The goal is to develop an understanding of how a switch communicates with other switches and routers in a small- or medium-sized business network to implement VLAN segmentation. This course focuses on Layer 2 switching protocols and concepts. Through hands-on activities students are able to implement, verify, and troubleshoot switching technologies. An introduction to current wireless LAN technologies is also included. This course is currently based on CCNA Exploration version 4 of the curriculum.

Rationale:

The CCNA curriculum is extensive and beyond the domain of a single course. Following this course, one additional Network Certification course will further the students progress towards full certification. The four courses are referred to by Cisco as CCNA1 - 4. The courses themselves do not result in CCNA certification; one formal exam must be taken at a PearsonVUE™ Testing Centre at the student's own expense upon completion of the four courses.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1.   Perform basic LAN design based on appropriate design principles.

Potential Elements of the Performance:
- Describe how a hierarchical network supports the voice, video, and data needs of a small- or medium-sized business.
- Describe the functions of each of the three levels of the hierarchical network design model, the principles of hierarchical network design (aggregate connectivity, network diameter, and redundancy), and the concept of a converged network.
- Provide examples of how voice and video over IP affect network design.
- Select appropriate devices to operate at each level of the hierarchy, including voice and video components.
- Match the appropriate Cisco switch to each layer in the hierarchical network design model.

This learning outcome will constitute approximately 15% of the course.

Reference: Chapter 1

2.   Understand basic switch concepts and perform switch configuration.

Potential Elements of the Performance:
- Summarize the operation of Ethernet as defined for 100/1000 Mbps LANs in the IEEE 802.3 standard.
- Explain the functions that enable a switch to forward Ethernet frames in a LAN.
- Configure a switch for operation in a network designed to support voice, video, and data transmissions.
- Configure basic security on a switch that will operate in a network designed to support voice, video, and data transmissions.

This learning outcome will constitute approximately 15% of the course. Reference: Chapter 2

3.   Configure and troubleshoot VLANs on switches.

Potential Elements of the Performance:
- Explain the role of VLANs and trunking VLANs in a network.
- Configure VLANs on the switches in a network topology.
- Troubleshoot the common software or hardware configuration problems associated with VLANs on switches in a network topology.

This learning outcome will constitute approximately 15% of the course.   Reference: Chapter 3

4.   Describe and configure VTP, VLAN Trunking Protocol on switches.

Potential Elements of the Performance:
- Explain the role of VTP in a converged switched network.
- Describe the operation of VTP including domains, modes, advertisements, and pruning.
- Configure VTP on the switches in a converged network.

This learning outcome will constitute approximately 10% of the course. Reference: Chapter 4

5.   **Describe and Implement STP, Spanning Tree Protocol in switch networks.**

Potential Elements of the Performance:
- Explain the role of redundancy in a converged network.
- Summarize how STP works to eliminate Layer 2 loops in a converged network.
- Explain how the STP algorithm uses three steps to converge on a loop-free topology.
- Implement rapid PVST+ in a LAN to prevent loops between redundant switches.

This learning outcome will constitute approximately 10% of the course.   Reference: Chapter 5

6.   **Describe and configure inter-VLAN routing.**

Potential Elements of the Performance:
- Explain how network traffic is routed between VLANs in a converged network.
- Configure inter-VLAN routing on a router to enable communication between end-user devices on separate VLANs.
- Troubleshoot common inter-VLAN connectivity issues.

This learning outcome will constitute approximately 15% of the course.   Reference: Chapter 6

7.   **Understand and configure basic Wireless LANs.**

Potential Elements of the Performance:
- Describe the components and basic operation of wireless LANs.
- Describe the components and operations of basic WLAN security.
- Configure and verify basic wireless LAN access.
- Troubleshoot wireless client access.

This learning outcome will constitute approximately 20% of the course.   Reference: Chapter 7

III.   TOPICS:
1.   LAN Design

2.   Basic Switch Concepts and Configuration

3.   VLANs

4.   VTP: VLAN Trunking Protocol

5.   STP: Spanning Tree Protocol

6.   Inter-VLAN Routing

7.   Basic Wireless Concepts and Configuration

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

Entire curriculum is available online.

Text (optional but recommended "LAN Switching and Wireless, CCNA
Exploration Companion Guide" by Cisco Press , 2008. ISBN: 1-58713-207-9

V.   EVALUATION PROCESS/GRADING SYSTEM:
Theory:
          Online Cisco Module exams   35%
          Online Final Cisco Exam   25%
Lab:
          Practical Test   20%
          Lab Activities   20%

                                           100%

Notes:
- It is necessary to attain a grade of 50% on the final Cisco Exam in order to proceed to the next Cisco Certification Course.
- Online Cisco exams must be written in class during class time. It is unacceptable to print or otherwise copy any of the online Cisco exams**.**
- Minor modifications to the evaluation scheme may be made during the semester to accurately reflect changes in emphasis.

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% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
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.	

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 satisfactory.
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

ATTENDANCE:
Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances must be discussed with the instructor ahead of time.   Opportunities to re-write quizzes or tests will be based on this requirement.

VI.   SPECIAL NOTES:

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.

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.

Prior Learning Assessment**:**
Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:
The College considers *WebCT/LMS* as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the *Learning Management System* communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade "C", (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.

Student Portal:
The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to https://my.saultcollege.ca.

Electronic Devices in the Classroom:
Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

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.

Tuition Default:
Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of *March,* will be removed from placement and clinical activities. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.