SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	Cisco (CCNP) Certification I		
CODE NO. :	CSN308	**SEMESTER:**	6
PROGRAM:	Computer Network Technologist		
AUTHOR:	Mark Allemang		
DATE:	Fall 2005	**PREVIOUS OUTLINE DATED:**	Winter 05
APPROVED:			
	_____ **DEAN**		_____ **DATE**
TOTAL CREDITS:	5		
PREREQUISITE(S):	CSN310		
HOURS/WEEK:	4		

I. COURSE DESCRIPTION:

This course builds on the CCNA curriculum by covering advanced routing concepts and protocols. Instruction includes advanced concepts in networking, network terminology, and routing protocols, including the Border Gateway Protocol (BGP), the Enhanced Interior Gateway Routing Protocol (EIGRP), the Open Shortest Path First (OSPF) protocol, and the Intermediate System-to-Intermediate System (IS-IS) protocol. Topics also include hierarchical design principles for building scalable internetworks, advanced routing concepts in building scalable internetworks, and key characteristics for building a secure, responsive, and adaptable internetwork using access control lists (ACLs), route redistribution, and policy-based routing.. Students will install, configure, and operate complex routed LAN and WAN networks.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Build Scalable IP Internetworks

   Potential Elements of the Performance:
   - List and describe the layers of the 3 layer hierarchical design model.
   - List and describe the 5 characteristics of scalable internetworks
   - Select appropriate routing protocols
   - Implement advanced routing techniques such as priority queuing, equal & unequal cost load balancing.
   - Configure VLSM, DHCP and NAT as methods for conserving IP address space
   - Migrate from RIP to other routing protocols

   This learning outcome will constitute approximately 30% of the course.
   Reference: Module 1,2

2. Utilize Interior routing protocols at an advanced level.

   Potential Elements of the Performance:
   - Describe various routing processes including default routing, floating static routes, convergence and route calculations.

- Configure and verify the operation of RIP V2
- Describe EIGRP characteristics such as packet types, various EIGRP tables and route summarization with EIGRP
- Describe the characteristics of multiple area OSPF networks.
- Describe the characteristics of OSPF network types including stub, totally stubby and not so stubby (NSSA) areas.
- Compare IS-IS with other Link State routing protocols.
- Develop a vocabulary for the IS-IS routing protocol and be able to describe terms such as End devices and Intermediate (IS) devices.
- Configure IS-IS routed networks

This learning outcome will constitute approximately 45% of the course.
Reference: Module 3-7

3. Improve network performance through advanced control of interior routing protocols

Potential Elements of the Performance:
- Control routing update traffic
- Implement policy routing
- Control route redistribution
- Complete a routing optimisation challenge lab

This learning outcome will constitute approximately 10% of the course.
Reference: Module 8

4. Describe the characteristics of and configure the BGP Border Gateway Routing Protocol

Potential Elements of the Performance:
- Describe the characteristics of autonomous systems from a Border Gateway Routing Protocol perspective
- Compare and contrast multihomed non transit and multihomed transit autonomous systems.
- Describe and configure the various attributes of BGP for example: next hop, AS_PATH, Multi Exit Discriminator (MED) attribute
- Configure Redundancy symmetry and load balancing in BGP networks

- Complete a BGP challenge lab in preparation for the course practical test

This learning outcome will constitute approximately 15% of the course.
Reference: Module 9

III. TOPICS:

1. Scalable Internetworks
2. Routing with IGPs
3. Route optimisation
4. Exterior Gateway Protocols

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Optional Textbook: CCNP 1 Advanced Routing Companion Guide 2nd Edition, Cisco Press
ISBN: 1-58713-135-8

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory:

Online Cisco Module exams	30%
Online Final Cisco Exam	25%

Lab:

Practical Test	20%
Lab Activities	25%

Special Note:
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.

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. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual – Deferred Grades and Make-up*).
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.

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 students 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 should be discussed with the instructor.

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 703 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. This course is eligible for challenge or credit transfer if CCNA accreditation has been achieved or Cisco Network Academy Semester 2 credit can be proven with a grade of 60% or better on the final exam. Satisfactory completion of a practical test will also be required.

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.