SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Networking Essentials

CODE NO. : CSN1200 **SEMESTER:** 2

PROGRAM: Computer Network Technician
Computer Engineering Technician
Computer System Support Technician
Computer Programmer

AUTHOR: Mark Allemang

DATE: Jan. 2003 **PREVIOUS OUTLINE DATED:** None

APPROVED:

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DEAN **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S): None

HOURS/WEEK: 4

I. COURSE DESCRIPTION:

This course studies networking technologies and protocols currently in use such as the TCP/IP suite of protocols used on the Internet. The course will also include the study of routing and bridging techniques and network devices. Practical exercises in network cable installation planning, terminating and testing is also an important component of this course.

Rationale:

This course is also the beginning of the Cisco Certified Networking Associate CCNA curriculum. The CCNA curriculum is extensive and beyond the domain of a single course. Should the student chose the computer networking program, three additional CCNA courses will further the students progress towards full certification. The 4 courses are referred to by Cisco as Semester 1,2,3 and 4. The semesters themselves do not result in CCNA certification; one formal exam must be taken at a Prometric™ Testing Centre at the student's own expense upon completion of the 4 semesters.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Configure a computer's hardware, software and network parameters in order to allow it to function on a network.

   Potential Elements of the Performance:

   - Recall the components of a computer including CPU RAM, ROM, BUS and describe their role in the computer.
   - Install and configure a Network Interface Card to be used on a LAN.
   - Configure the basic network parameters for a PC in order for it to function on a network.
   - Configure the application software (web browser) appropriately.

   This learning outcome will constitute approximately 10% of the course.

   Reference: Cisco Online Curriculum, Sem1, Chapt. 1.

2. Describe the OSI 7 layer model including the purpose of each layer, protocol examples at each layer and how data is encapsulated into sublayers.

Potential Elements of the Performance:

- List and describe the 7 layers of the OSI model
- Identify various protocols at each layer and describe their purpose
- Identify the method of addressing at various layers
- For the physical layer, identify how electronic signals are used to represent data in a communications system and how noise can interfere with these signals
- Describe the importance of bandwidth and how it is measured

This learning outcome will constitute approximately 25% of the course.

Reference: Cisco Online Curriculum, Sem1, Chapt. 2, 10-15

3. Compare various local area network types, media, hardware components and associated standards and applications.

Potential Elements of the Performance:

- Compare common LAN topologies.
- Specify LAN components required for different types of LANs.
- Compare Ethernet (IEEE 802.3), Token Ring (IEEE 802.5) and other LAN implementations to enable appropriate selection.
- Improve the performance of a LAN.

This learning outcome will constitute approximately 20% of the course.

Reference: Cisco Online Curriculum, Sem1, Chapt. 3-7

4. Given a sketch of an internetwork, apply various IP addressing schemes.

Potential Elements of the Performance:

- Convert numbers from binary to decimal and from decimal to binary
- Utilise the IP subnet mask to break IP addresses up into subnets
- Apply appropriate IP addressing to satisfy a particular networking requirement

This learning outcome will constitute approximately 30% of the course.

Reference: Cisco Online Curriculum, Sem1, Chapt. 10

5. Participate in the planning and installation of structured network cabling.

   Potential Elements of the Performance:

   - Describe the various standards that apply to structured cabling
   - Identify safety and performance issues that apply to network cabling
   - Describe the purpose of, identify and construct network patch cables including straight through, crossover and rollover
   - Plan and install network cable using structured cabling standards and techniques

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

   Reference: Cisco Online Curriculum, Sem1, Chapt. 8-9

III. TOPICS:

1. Computing Basics
2. The OSI model
3. Layer 1 – Electronic Signals, Media, Connections and Collisions
4. Layer 2 – Concepts and Technologies
5. Layer 3 – Routing, Addressing and Protocols
6. Layer 4 –The Transport Layer
7. Layer 5 – The Session Layer
8. Layer 6 – The Presentation Layer
9. Layer 7 – The Application Layer
10. Structured Cabling

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

None.

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory:

Online Cisco Chapter exams	20%
Block Tests	20%
Online Final Cisco Exam	20%

Lab:

Practical Tests	10%
Lab Activities	30%

Note: It is necessary to attain a grade of 70% 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.

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%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% 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 60%, 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 50% 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 instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 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 standing in the course should consult the instructor. This course is eligible for challenge or credit transfer if CCNA accreditation has been achieved or Cisco Network Academy Semester 1 credit can be proven with a grade of 70% or better on the final exam.

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.