# SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
## SAULT STE MARIE, ON

## COURSE OUTLINE

**Course Title:** Wide Area Networks I

**Code No.:** CSN204     **Semester:** 4

**Program:** Computer Network Technology

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**Date:** January, 1999     **Previous Outline Date:** Dec. 97

**Approved:** _K. DeRosario_     _Jan. 6/99_
             **Dean**                  **Date**

**Total Credits:** 6     **Prerequisite(s):** CSN202
**Length of Course:** 16 WKS     **Total Credit Hours:** 64

Wide Area Networks I                                                    CSN204
**COURSE NAME**                                                         *CODE NO.*

**I.    COURSE DESCRIPTION:**

This course studies the WAN technologies and protocols currently in use to support internetworking, such as the TCP/IP suite of protocols used on the Internet.  In addition to WAN networking options, the course will include the study of routing and bridging techniques and devices.

**II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

**A.    Learning outcomes:**

1.    Analyze and describe the function of various TCP/IP protocols.

2.    Build a basic TCP/IP Internetwork within a Windows NT, Netware and UNIX environment and compare, contrast and troubleshoot each TCP/IP implementation.

3.    Implement special TCP/IP configurations such as Subnetted IP Addresses.

4.    Implement TCP/IP networking between diverse systems such as resource sharing between Windows NT and UNIX.

5.    Utilize network monitoring software (Netxray) to capture and analyze TCP/IP packets.

**B.    Learning Outcomes and Elements of the Performance:**

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

1.    *Analyze and describe the function of various TCP/IP protocols.*

**Elements of the Performance:**

- Revisit the OSI model and identify the appropriate layer for each of the TCP/IP protocols.
- describe the function of the various TCP/IP protocols
- describe TCP/IP addressing and basic routing techniques
- analyze various packet content using a packet analyzer

*This learning outcome will constitute approximately 40% of the course.*
Reference:  Text Parts I & III


**2.**     *Build a basic TCP/IP Internetwork within a Windows NT, Netware and UNIX environment and compare, contrast and troublshoot each TCP/IP implementation.*


**Elements of the Performance:**

- implement an IP router/gateway within Windows NT, Netware and UNIX.
- utilize the Internet for network management support
- analyze and describe the level of support (capabilities/limitations) for each of the above TCP/IP implementations
- make recommendations for the most appropriate implementation of TCP/IP for a given situation

*This learning outcome will constitute approximately 40% of the course.*
Reference:  Text Parts II and IV


**3.**     *Implement special TCP/IP configurations within NT-SERVER such as subnetted IP addresses, DNS server, DHCP, WINS.*


**Elements of the Performance:**

- Utilize the IP subnetting technique to make efficient use of IP address space
- implement a DNS server for a given domain naming requirement
- implement a DHCP and WINS server

*This learning outcome will constitute approximately 10% of the course.*
References: Chap. 4, 18, 31.


**4.**     *Implement TCP/IP networking between diverse systems such as resource sharing between Windows and UNIX.*

**Elements of the Performance:**

- utilize SAMBA as a product for sharing resources between Microsoft and UNIX

systems.

- investigate other diverse system resource sharing alternatives

*This learning outcome will constitute approximately 10% of the course.*
Reference: Internet SAMBA reference.

>   5.   *Utilize network monitoring software (Netxray) to capture and analyze TCP/IP and Ethernet packets.*

**Elements of the Performance:**

- utilize packet sniffing tools (Netxray and others) to capture, display and analyze network packets
- compare and contrast 2 different packet sniffing tools

*This learning outcome will constitute approximately 5% of the course.*
References: Chap. 49

## III.   TOPICS TO BE COVERED:

1.   TCP/IP Protocols and Services (Parts I, II and III).

2.   Implementing a TCP/IP System in various Operating Systems (Parts II and IV).

3.   Special focus on IP Address Subnetting, DNS, DHCP and WINS.

4.   SAMBA - Resource Sharing between Microsoft and UNIX.

5.   Analyzing Network Traffic

## IV.   REQUIRED STUDENT RESOURCES/TEXTS:

TEXT BOOK:
- **"TCP/IP UNLEASHED"**
  by Timothy Parker, Ph.D. (SAMS Publishing 1996)

## V.   EVALUATION PROCESS/GRADING SYSTEM:

Wide Area Networks I
*COURSE NAME*

CSN204
*CODE NO.*

| WRITTEN TESTS  (3) | 60% |
| LAB PROJECTS/ASSIGNMENTS/QUIZES | 40% |

(The percentages shown above may vary slightly if circumstances warrant.)

**NOTE:** *It is necessary to pass both the theory and the lab part of this course.   For example, it is not possible to pass the course if a student has a failing average in the written tests but is passing the lab portion,  (or vice versa).*

## GRADING SYSTEM

| | | | |
|---|---|---|---|
| A+ | | 90 - | 100% |
| A | | 80 - | 89% |
| B | | 70 - | 79% |
| C | | 60 - | 69% |
| R | Repeat Less than 60% | | |
| X | Incomplete | | |

## 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.
3.  The student has not had a failing grade in all of the theory tests taken.
4.  The student has made reasonable efforts to participate in class and complete assignments.

The nature of the upgrading requirements will be determined by the instructor and may involve one or more of the following: completion of existing labs and assignments, completion of additional assignments, re-testing on individual parts of the course or a comprehensive test on the entire course.

## LABS:

Lab activities represent a very important component of this course. Because of this, **attendance is mandatory** and the satisfactory completion of all lab activities is required. *It is the student's responsibility to discuss absences from regularly scheduled labs with the instructor so that alternate arrangements (where possible) can be made to complete*

*the lab requirements.*

## LAB REPORTS

Required lab report requirements will be detailed before labs are assigned.

## 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**
  Students with special needs (e.g. physical limitations, visual or hearing impairments, or learning disabilities) are encouraged to discuss any required accommodations confidentially with the instructor and/or contact the Special Needs Office so that support services can be arranged.

- **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 post-secondary institutions.

- **Course Modifications**
  Your instructor reserves the right to make reasonable modifications to the course as deemed necessary to meet the needs of students or take advantage of new or different learning opportunities.

## VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced standing in the course should consult the instructor. This course is not eligible for challenge at the present time.