

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

*Course Title:* WIDE AREA NETWORKS II

*Code No:* CSN301 *Semester:* 5

*Program:* COMPUTER NETWORK TECHNOLOGY

*Author:* Mark Allemang

*Date:* August, 1998 *Previous Outline Dated:* \_\_\_\_\_

*Approved:* *J. DeSantis* *Sept. 1/98*  
Dean Date

*Total Credits:* 6

*Prerequisites:* CSN204

*Length of Course:* 4 Hours /Week *Total Credit Hours:* 96



**I. COURSE DESCRIPTION:**

This course is a continuation of CSN204 WANS I. Current topics in internetworking will be studied with the use of case studies, research involving resources on the Internet and presentations. Important standards which support wide area network applications in email, commerce, network management and security will be investigated.

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

**A. Learning outcomes:**

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

1. Configure a network utilizing DHCP, DNS and WINS in an NT environment.
2. Configure and implement a firewall in order to provide "controlled access" to and from the Internet.
3. Investigate and configure a network management system based on the SNMP protocol.
4. Investigate encryption techniques used on the Internet in order to provide secure links for business transactions.
5. Analyze network requirements and design a network solution in order to satisfy those requirements.

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

1. *Configure a network utilizing DHCP, DNS and WINS in an NT environment*

**Elements of the Performance:**

- Review the purpose and use of DHCP, DNS and WINS.
- Implement a TCP/IP based network including a DHCP, DNS and WINS server and clients.
- Investigate using WINS to resolve DNS queries for hosts with dynamically assigned IP addresses.

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

Reference: Text Chapt. 18, 31

2. *Configure and implement a firewall in order to provide controlled access to and from the Internet.*

**Elements of the Performance:**

- Describe the features of a packet filtering firewall and how they control Internet access.
- Investigate current firewall products.
- implement a firewall controlling access to various applications in various direction combinations.

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

Reference: Text Chapt. 46

3. *Investigate and configure a network management system based on the SNMP protocol.*

**Elements of the Performance:**

- Identify the popular network management products and describe their capabilities.
- Describe the nature of SNMP MIBs, traps and functions.
- Implement a network management system based on SNMP.
- Utilize the SNMP tools (Get/Put/Trap) in both a UNIX and NT environment.
- Investigate and utilize the SNMP Agent for NT and Windows 95.
- Utilize a network sniffer to capture and analyze packets.

*This learning outcome will constitute approximately 40% of the course.*

Reference: Text Chapt. 47

- 4) *Investigate encryption techniques used on the Internet in order to provide secure links for business transactions.*

**Elements of the Performance:**

- Describe the components required to provide a secure transaction on the Internet.
- Using a packet sniffer, verify the ability to decode unencrypted transactions but not secure encrypted transactions.

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

Reference: Internet.

5. Analyze network requirements and design a network solution in order to satisfy those requirements.

**Elements of the Performance:**

- Given a set of network requirements and constraints, design a wide area network to satisfy the requirements. Some examples of these requirements will include:
  - Cost limitations
  - Bandwidth requirements
  - Protocol/routing requirements
  - Utilizing WAN techniques to connect remote company sites
  - Remote access methods.
- Provide a presentation of the solution to the class

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

**III. TOPICS TO BE COVERED:**

1. DHCP, DNS and WINS – A Review
2. Internet security and Firewalls
3. Network Management
4. Secure Internet transactions
5. Network design

**IV. REQUIRED STUDENT RESOURCES/TEXTS:**

TEXT BOOK:

- **“TCP/IP UNLEASHED”**  
by Timothy Parker, Ph.D. (SAMS Publishing 1996)

**V. EVALUATION PROCESS/GRADING SYSTEM:**

WRITTEN TESTS (2)	60%
LAB PROJECTS/ASSIGNMENTS/QUIZES	30%
Presentation	10%

(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	55	-	69%

R Repeat Less than 55%  
X Incomplete

### **UPGRADING OF INCOMPLETES**

When a student's course work is incomplete or final grade is below 55%, 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.
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**

Wide Area Networks II  
**COURSE NAME**

CSN301  
**CODE NO.**

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.