

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: COMPUTER NETWORKS

Code No.: CET314-3 Semester: 6

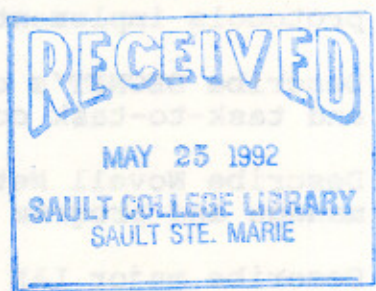
Program: COMPUTER ENGINEERING TECHNOLOGY

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Date: MAY , 1992 Previous Outline Dated: MAY , 1991

APPROVED: *LP Crozetta*  
Dean

92-05-07  
Date



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TOTAL CREDIT HOURS:            45

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PREREQUISITES:                    CET222

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I. PHILOSOPHY/GOALS:

This course in Computer Networks for Computer Technology students in their 6th semester, expands upon the basic principles of Data Communications developed in CET222, emphasizing local and wide area networks. Computer networking topics in the following specific areas are studied: The 7-layer OSI Model of computer networks; DNA, Digital's Network Architecture and DECNET-VAX; Local Area Networks and the IEEE 802 standards; Packet Switching and X.25; ISDN ; Case Studies of wide area and local area networks; Novell Netware LAN installation, management and programming.

Lab exercises on a Novell Netware LAN and DECNET-VAX, including network management and task-to-task communications form an important component of this course.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1. Describe the OSI network model and the important communication protocols implemented in its layers.
2. Describe DECNET's components and use its services for management and task-to-task communication.
3. Describe Novell Netware architecture and be able to install, manage and program such networks.
4. Describe major LAN technologies and their important standards.

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III. TOPICS TO BE COVERED:

1. OSI 7-layer network model.
2. DECNET architecture, its layers, protocols and management.
3. IEEE 802 LAN standards and other important protocols.
4. Novell Netware.
5. Alternatives for Network Operating systems
6. Packet switching, X.25 and ISDN

IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

BLOCK 1: STANDARDS AND LAYERED PROTOCOLS;  
THE OSI MODEL and DNA, DEC'S NETWORK  
ARCHITECTURE

TEXT:  
"DATA NETWORKS:  
CONCEPTS,  
THEORY AND  
PRACTICE" by  
Uyless Black  
(Prentice-Hall)

Chap. 8

"Digital's  
Networks: An  
Architecture  
with a Future")

"Digital's  
Telecommuni-  
cations and  
Networks Buyers  
Guide"

1. Describe in detail the layers of OSI, Open Systems Interconnection 7-layer model for networks and in addition, understand the terminology and principles of layered protocols.
2. Be able to provide an overview of Communication Protocol "Standards" in computer networking today and describe major trends in networking.
3. Describe the layers of DNA, Digital's Network Architecture.
4. Describe DECNET and DNA in the following areas:
  - a) Basic Decnet terminology basic concepts.

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- b) An overview of Decnet configurations, phases and products.
- c) Decnet functions and protocols at each of the major layers of the DNA model.
- d) The mechanisms used for Task-to-task communications and remote file transfer between systems.
- e) Network System Management, the "NCP" Utility and other management tools.

BLOCK 2: LOCAL AREA NETWORKS

1. Describe each of the following IEEE 802 standards in detail:

- a) IEEE 802.2 LLC, Logical Link Control. In addition, various subsets of the HDLC data link protocol including LAP, LAPB, and LABD will be studied.
- b) IEEE 802.3 CSMA/CD.
- c) IEEE 802.4 TOKEN BUS
- d) IEEE 802.5 TOKEN RING and the IBM Token Ring

Chap. 11 and 20  
(Black)

2. Describe the basic characteristics of MAP (Manufacturing Automation Protocol) and TOP (Technical and Office Protocols).

Chap. 20

3. Describe FDDI, Fiber Distributed Data Interface systems.

Chap. 20

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BLOCK 3: OTHER LANs, INTERLAN CONNECTIONS  
and CASE STUDIES

1. Describe important Network Operating System alternatives.
2. Describe Novell Netware: architecture, hardware, installation, management and programming. In addition be able to perform system management tasks and write network programs in C.
3. Describe the role of NETBIOS and describe its operation.
4. Describe other LAN alternatives: Appletalk, 3 COM 3+, Pathworks.
5. Describe various Routing Protocol Alternatives : in particular, TCP/IP.

Instructor's  
Notes.

Chap. 14,15

BLOCK 4: PACKET SWITCHING, X.25 NETWORKS AND  
ISDN

1. Describe the nature of packet switching nad the X.25 standard( the CCITT standard for packet networks).
2. Describe ISDN: Integrated Services Digital Network services.
3. Describe PBX systems and their present capabilities.

Chap. 14

Chap. 19

Chap. 23

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V. METHOD OF EVALUATION:

2 THEORY TESTS (30% each)	60%
LAB PROJECTS/ASSIGNMENTS	30%
QUIZZES	10%

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

GRADING SCHEME

A+	90	-	100%
A	80	-	89%
B	70	-	79%
C	55	-	69%
I	Incomplete		
R	Repeat		

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 the following criteria:

1. The students attendance has been satisfactory.
2. An overall average of at least 40% 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.

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VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS: "DATA NETWORKS: CONCEPTS, THEORY AND PRACTICE"  
by Uyles Black (Prentice-Hall)

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE:

1. "Digital's Networks: An Architecture with a Future"
2. "Digital's Telecommunications and Networks Buyers Guide."
3. "Netware Server: Troubleshooting and Maintenance" by Liebing and Neff
4. "Programmers Guide to Netware" by C. Rose
5. Novell Netware Installation Guide and Users Manuals
6. VAX/VMS Guide to Networking"

VIII. SPECIAL NOTES:

Students with special needs (eg. physical limitations, visual or hearing impairments, or learning disabilities) are encouraged to discuss any required accomodations confidentially with the instructor.

Your instructor reserves the right to modify the course as deemed necessary to meet the needs of students or take advantage of new or different learning opportunities.

