

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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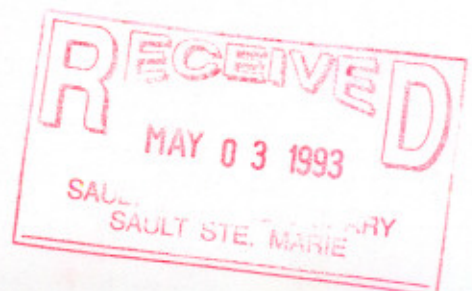
APPROVED:

J. Crockett

Dean

93-04-30

Date



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TOTAL CREDIT HOURS: 45

PREREQUISITES: CET222

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

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

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.
 - b) An overview of Decnet configurations, phases and products.
 - c) Decnet functions and protocols at each of the major layers of the DNA model.

REQUIRED RESOURCES

Instructor's
Notes

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

Instructor's
Notes.

"Digital's
Networks Buyers
Guide"

Instructor's
Notes.

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- 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.

VAX/VMS
Networking
Manuals.

VAX/VMS
Networking
Manuals.

BLOCK 2: LOCAL AREA NETWORKS

Instructor's
Notes

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
2. Describe the basic characteristics of MAP (Manufacturing Automation Protocol) and TOP (Technical and Office Protocols).
3. Describe FDDI, Fiber Distributed Data Interface systems.

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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.

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"The Netware
Server
Handbook"

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- 3. Describe the role of NETBIOS and describe its operation.
- 4. Describe various Routing Protocol Alternatives : in particular, TCP/IP.

Instructor's
Notes.

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

Instructor's
Notes.

- 1. Describe the nature of packet switching and 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.

V. METHOD OF EVALUATION:

2 THEORY TESTS (30% each)	60%
LAB PROJECTS/ASSIGNMENTS	40%

(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		

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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 student's 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.

VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS: Netware Server Troubleshooting & Maintenance
by E. Liebing, K. Neff (McGraw-Hill)

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE:

1. "Digital's Networks: An Architecture with a Future"
2. "Digital's Networks Buyers Guide."
3. "Programmers Guide to Netware" by C. Rose
4. Novell Netware Installation Guide and Users Manuals
5. 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 accommodations 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.

The Blocks of objectives will not necessarily be covered in the order shown in this course outline.