

FSU CURRICULUM FILE SYLLABUS

DATE APPROVED _____ (COMPLETED AT UNIV LEVEL)

COURSE PREFIX/NUMBER: CDA 4503

COURSE TITLE: Introduction to Computer Networks

PRE OR COREQUISITES: COP 4530 REPEAT CODE: 00

LIST COURSE OBJECTIVES:

A student who has completed this course with a passing grade should be able to:

- *Demonstrate a basic understanding of 'nuts and bolts' that drive today's Internet.*
- *Demonstrate an understanding of the skills required for network programming.*
- *Demonstrate an understanding of the application layer provided by today' computer networks, including HTTP, FTP, SMTP and socket programming with TCP/UDP*
- *Demonstrate an understanding of the transport layer of networks, including UDP and TCP.*
- *Demonstrate an understanding of the network layer and routing, including the internet protocol (IP).*
- *Demonstrate an understanding of the link layer and local area networks, including Wireless links, PPP and ATM.*

OBJECTIVES SHOULD BE BROADLY STATED TO ALLOW FACULTY DIFFERENCES AND ALLOW CHANGES IN MODE OF DELIVERY. ENOUGH DETAIL SHOULD BE GIVEN TO DISTINGUISH FROM OTHER COURSES IN ASSIGNMENT OF A SUS COURSE NUMBER. COMMITTEE APPROVALS ARE REQUIRED FOR A CHANGE IN OBJECTIVES.

GIVE BRIEF OUTLINE OF TOPICS TO BE COVERED (NO DATES):

1. Computer Networks and the Internet

- What Is the Internet? Packet-Switched Networks. Protocol Layers and Their Service Models

2. Application Layer

- Principles of Application Layer Protocols. The Web and HTTP. File Transfer: FTP. Electronic Mail (SMTP, MIME). DNS--The Internet's Directory Service.
- Socket Programming with TCP/UDP. Building a Web Server. Content Distribution

3. Transport Layer

- Transport-Layer Services. Multiplexing and Demultiplexing. Connectionless Transport: UDP. Principles of Reliable Data Transfer.

- Connection-Oriented Transport: TCP. Principles of Congestion Control (mainly TCP)

4. Network Layer and Routing

- Network Service Models. Routing Principles. The Internet Protocol (IP). Routing in the Internet. What's Inside a Router?
- IPv6. Multicast Routing. Mobility and the Network Layer

5. Link Layer and Local Area Networks

- Data Link Layer Services. Error-Detection and -Correction Techniques. Multiple Access Protocols. LAN Addresses and ARP. Ethernet
- Hubs, Bridges, and Switches. Wireless Links. PPP: The Point-to-Point Protocol.
- Asynchronous Transfer Mode (ATM). Frame Relay

(Additional material if time permits)

6. Multimedia Networking

- Streaming Audio and Video. Internet Telephony. Quality of Service (Integrated and Differentiated Services)

7. Security in Computer Networks

- What is network security? Principles of cryptography. Attacks and Counter-measures

8. Network Management

- What Is Network Management? The Infrastructure for Network Management
- The Internet-Standard Management Framework

EVALUATION CRITERIA CHECK ONE (CHANGE IN EVALUATION CRITERIA REQUIRES THE DEPARTMENT TO SUBMIT A NEW SYLLABUS FOR THE FILE)

EXAMS ONLY (THE NUMBER AND WEIGHT OF EACH TO BE REFLECTED ON THE STUDENT SYLLABUS)

XX EXAMS AND OTHER (SUCH AS LAB REPORTS OR ASSIGNMENTS, TERM PAPER OR WRITTEN PROJECT, ORAL PRESENTATION; THE WEIGHT OF EACH TO BE REFLECTED ON THE STUDENT SYLLABUS.

NO EXAMS - ONLY ASSIGNMENTS (TO BE DESCRIBED CLEARLY ON THE STUDENT SYLLABUS)