Computer Networks

CST 415

Tom Findley

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Syllabys Review:

Current events in computer networks and distributed systems.

Lecture Topics and Labs to Include:

- Network Protocols
- Interface Standards
- Transmission Modes
- Transmission Mediums
- 7-Layer OSI Reference Model
- Standards
- 5-Layer Internet Reference Model
- 5-Layer TCP/IP Reference Model
- Internet Protocol Suite
- Routing and WAN Architectures
- Line Monitoring
- TCP/IP Programmer's Toolkit
- Transaction Processing Modes

Instructor and Background

Tom Findley

Systems analyst supporting factory data communications software and developing customer specific data communications features. (9 years)

Systems programmer supporting a state-wide banking data network. (2 years)

Network services manager for a multi-state data and voice network. (10 years)

Owner and president of a network consulting, integration and POS transaction processing company (19 years)

Text Book

Internetworking with TCP/IP Principals, Protocols, and Architecture, Fifth Edition 2006, by Douglas E. Comer. Pearson Prentice Hall Publisher. ISBN 0-13-187671-6

Primary Reference Books

Computer Networks, Fifth Edition 2011, Andrew S. Tanenbaum and David J. Wetherall. Pearson Prentice Hall Publisher. ISBN-13: 978-0-13-212695-3, ISBN-10: 0-13-212695-8

TCP/IP Illustrated, Volume 1 The Protocols, W. Richard Stevens, Addison Wesley Publisher

TCP/IP Illustrated, Volume II The Implementation, W. Richard Stevens, Addison Wesley Publisher

UNIX Network Programming, W. Richard Stevens, Prentice Hall Publisher

Grading

Point Values:

Assignments:	10 Pts. Ea.
Extra Credit:	TBD
Disscussions:	55 Points
Midterm:	100 Points
Final:	50 Points
Wireshark Lab:	100 Points
Client Lab:	100 Points
Server Lab:	100 Points
Middleware Lab:	100 Points

Letter Grading:

91-100%	= 'A'
81-90%	= 'B'
71-80%	= 'C'
61-70%	= 'D'
<=60%	= 'F'

Scheduling

Today's Lecture:

- Labs Review
- Brief History
- Data Communications Definition
- Client, Server, Circuit Definitions
- Transaction Definition
- Email and Push Mail
- Layering - OSI and TCP/IP
- Standards

Scheduling
(continued)

Remaining Lectures (subject to change at instructor's descretion):

- OSI Layer 2 - Link Layer
- OSI Layer 3 - Network Layer (IP Protocol)
- OSI Layer 4 - Transport Layer (TCP, UDP Protocol)
- The TCP/IP Model and Socket Interface
- Level 2: Hubs, Switches, VLANs, and Protocols Including MPLS
- Router Architecture and Protocols (BGP, RIP, OSPF)
- Transaction Processing Modes
- Virtual Private Networks (VPNs)
- Network Security
- TBD

Scheduling
(continued)

Labs:

Lab 1:

Network Analyzer (Wireshark) - Download and examine protocols at OSI layers, 2, 3, 4, 6, and 7.

Lab 2:

Configure three Linux systems, on a hypervisor. A client and server connected via a Linux router using SSH.

Lab 3:

Write a TCP/IP client and test against instructor's server.

Lab 4:

Write a TCP/IP server and test against another student's Lab 2 client.

Other Items

Netiquette

Honesty and Integrity

Plagiarism