

COE 768: COMPUTER NETWORKS

2010 FALL

COURSE DESCRIPTION

This is an introductory course in computer networks. In particular, it concentrates on the Internet technology. It first introduces the OSI and TCP/IP network architecture models. It then studies the implementation principles and design issues at each layer of these models. Lecture topics include: OSI and TCP/IP models, data-link protocols, local area networks, wide-area networks, Internet structure, TCP/IP protocol suite, and application Layer protocols. Laboratory work focuses on the implementations of various networking applications based on the BSD socket. In addition, students will gain practical experience by building and studying a physical network using switches and routers.

COURSE EVALUATION

Laboratory:

Project	12%
Assignments	7%
Assignment 3: Configuration Lab	6%

Lecture:

Mid-term Test (wk 7, Wednesday, Oct, 19 th)	25%
Final Examination (Dec.)	50%

*All of the required course specific written reports will be assessed not only on their technical or academic merit, but also on the communication skills of the author as exhibited through these reports.

MAJOR TOPICS

Introduction (3 hours) (Sections 1.1-1.4 and 2.1-2.4)

Introduction of computer networks, OSI reference model, TCP/IP protocol suite.

Data-Link Layer (10 hours) (Sections 10.4, 10.5, 11.1-11.7)

Synchronous and Asynchronous transmission, Error Detection Codes, Stop-and-wait protocol, Go-back-n protocol, Selective-repeat protocol, HDLC, PPP.

Local-Area Networks (10 hours) (Sections 13.1-13.5, 14.1, 15.1, 15.3)

Ethernet, LAN Switching, Spanning Tree, VLANs, WLAN.

Wide-Area Networks (3 hours) (Sections 8.2-8.3)

Datagram networks, Virtual-Circuit networks

Internet Protocols (10 hours) (Sections 19.1-19.2, 20.1-20.3, 21.1, 22.1-22.3)

22.1, 22.2, 25.1-25.5)

Internet architecture, Internet Protocol (IP), IP addressing, Subnetting, CIDR, Other IP related protocols.

PRESCRIBED TEXT**Required text**

"Data Communications and Networking", 4th edition, by Behrouz A. Forouzan, McGraw-Hill, 2007. ISBN-13: 978-0-07-296775-3

Recommended

"Internetworking with TCP/IP, Vol. III", by D.E. Comer and D.L. Stevens, Prentice Hall, 2001. ISBN 0-13-032071-4

References

- "Communication Networks", 2nd edition, by A. Leon-Garcia and I. Widjaja, McGraw Hill, 2004. ISBN 0-07-246352-x
- "Computer Networks", 4th edition, by Andrew S. Tanenbaum, Prentice Hall, 2003. ISBN 0-13-349945-6
- "Data and Computer Communications", 7th edition, by William Stallings; Prentice Hall, 2004. ISBN 0-13-100681-9
- "Internetworking with TCP/IP, Vol. I, Principles, Protocols, and Architecture", 4th edition, by D.E. Comer and D.L. Stevens, Prentice Hall, 2000. ISBN 0-13-018380-6

Instructor: Dr. Bobby Ngok-Wah Ma

Office: EPH406

email: bma@ee.ryerson.ca

Ext: 7929

Counselling hours: Tuesday 2-4pm, Thursday 4-5pm