

# School of Information Technology International Business College

7 Greenfield Parade  
Bankstown 2200 NSW Australia

## Computer Networks

**Subject Coordinator and Lecturer:** Professor Minh Hung Le

School of Information Technology  
International Business College

7 Greenfield Parade  
Bankstown 2200 NSW Australia

Tel: (02) 9790 3300

Fax: (02) 9790 3302

Emails: m.le@sece-unsw.org or minhle@ieee.org

### **Aim of Unit:**

This unit will cover all major Computer Network Technologies including Asynchronous Transfer Mode (ATM), Internet and Telephone. Essential Networking Topics such as Protocol Layering, Multiple Access, Switching, Scheduling, Routing, Congestion Control, Error and Flow Control, and Network Security will be covered in detail. An Engineering Approach will be taken.

### **Unit Outline:**

- Explain Network Topologies and Communication Architectures.
- Demonstrate an Understanding of Networking Concepts and Functions.
- Describe and Analyse Common Protocols used in the Telephone Network, the Internet and ATM Networks.
- Introductory Concepts
- Network Topologies
- Error Control, Flow Control
- Packet Switching, Datagram Packet Switching and Virtual Circuits
- Queuing Theory; M/M/1 and other Queues, Simple Applications
- ATM Switching; Service categories, Protocol Formats, Switch Fabric Architectures
- High-Speed LANS, ISDN, B-ISDN
- Internetworking
- Network Security

**Mode of Delivery:**

Two hours lecture per week.  
One hour tutorial per week.

**Unit Assessment:**

Assignments, Laboratories	20 %
Mid-Semester Test	20 %
Final Examination	60 %

**Assessment Requirements:**

Students must receive 50% or more for each part of Unit Assessment in order to pass the subject.

**Student Workload:**

Students will have 3 hours per week face-to-face learning during semester.  
Students are expected to work at least 5 hours per week out of class.

**Text Book:**

1. William Stallings, "Data and Computer Communications", 7<sup>th</sup> edition, Prentice-Hall Inc., 2003

**Recommended References:**

1. Tanenbaum A. S., "Computer Networks", 4<sup>th</sup> edition, New Jersey, Prentice Hall, 2003
2. Halsall Fred, "Data Communications, Computer Networks and Open Systems", 4<sup>th</sup> edition, Addison-Wesley, 1996

## Subject Schedule

Weeks	Lecture/Tutorial Topics	Assignments/ Laboratories	Reading from Text Book
1	Overview Data Communications and Networking, Protocol Architecture	Lab #1	Chapters 1,2
2	Data Transmission.	Lab #1	Chapter 3
3	Guided and Wireless Transmission	Assignment #1	Chapter 4
4	Signal Encoding Techniques	Lab #1, Assignment #1	Chapter 5
5	Digital Data Communication Techniques	Lab #1, Assignment #1	Chapter 6
6	Data Link Control	Collect Lab #1	Chapter 7
7	<b>Mid-Semester Test</b> Multiplexing	Collect Assignment #1	Chapter 8
8	Spread Spectrum	Lab #2	Chapter 9
9	Cellular Wireless Networks	Assignment #2	Chapter 14
10	Local Area Network, Wireless LANs	Lab #2, Assignment #2	Chapters 15,17
11	Internetwork Protocols	Collect Lab #2	Chapter 18
12	Distributed Applications	Collect Assignment #2	Chapter 22
13	Revision		
14	<b>Final Examination</b>		