School of Information Technology
International Business College

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Computer Communications

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Aim of Unit:

In this unit an overview of the field of data and computer communications is provided, with emphasizes on the basic principles of computer communications networks and telecommunications technology.

Unit Outline:

- Introduction to Computer Communications, Data Communications, Networks
- Basic Concepts, Line configuration, Topology, Transmission modes, Categories of Network, and Internetworks
- The OSI Model, Layered Architecture, Functions of the OSI layers
- Signals, Analog and Digital signals, Periodic and Aperiodic signals, Time and Frequency domain representation of signals, Composite signals
- Encoding and Modulation, Digital-to-Digital Conversion, Analog-to-Digital Conversion, Analog-to-Analog Conversions
- Transmission of Digital Data, Parallel and Serial Data Transmission, DTE-DCE Interface, Modems
- Transmission Media, Guided and Un-Guided Media, Transmission Impairments and Channel Capacity
- Multiplexing, Frequency-Division-Multiplexing (FDM), Time-Division-Multiplexing (TDM)
- Error Detection and Correction
- Data Link Control, Elements of a Protocol, Stop-and-Wait Protocol, Sliding-Window Protocol
- Networking and Internetworking Devices, Repeaters, Bridges, Routers and Gateways
- Introduction to TCP/IP Protocol Suite, Overview of TCP/IP, Internet Protocol, Addressing, Subnetting

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. Behrouz A. Forouzan, "Data Communications and Networking", 2nd edition, McGraw-Hill, 2001

Recommended References:

1. William Stallings, "Data and Computer Communications", 7th edition, Prentice-Hall Inc., 2003
2. Tanenbaum A. S., "Computer Networks", 4th edition, New Jersey, Prentice Hall, 2002
3. Comer E. C., "Computer Networks and Internets", 4th edition, New Jersey, Prentice Hall, 2004

Subject Schedule

Weeks	Lecture/Tutorial Topics	Assignments/ Laboratories	Reading from Text Book
1	Introduction, Basic Concepts, The OSI Model	Lab #1	Chapters 1, 2, 3
2	Signals, Encoding and Modulating	Lab #1	Chapters 4, 5
3	Transmission of Digital Data: Interfaces and Modems, Transmission Media(IP)	Assignment #1	Chapters 6, 7
4	Multiplexing, Error Detection and Correction	Lab #1, Assignment #1	Chapters 8, 9
5	Data Link Controls, Data Link Protocols	Lab #1, Assignment #1	Chapters 10, 11
6	Local Are Networks, Metropolitan Area Networks	Collect Lab #1	Chapters 12, 13
7	**Mid-Semester Test** Switching, Point-to-Point Protocols	Collect Assignment #1	Chapters 14, 15
8	Integrated Services Digital Network(ISDN), X.25	Lab #2	Chapters 16, 17
9	Frame Relay, ATM	Assignment #2	Chapters 18, 19
10	SONET/SDH, Networking and Internetworking Devices	Lab #2, Assignment #2	Chapters 20, 21
11	Transport Layer, Upper OSI Layers	Collect Lab #2	Chapters 22, 23
12	TCP/IP Protocol Suite: Part 1, TCP/IP Protocol Suite: Part 2, Application Layer	Collect Assignment #2	Chapters 24, 25
13	Revision		
14	**Final Examination**		