

CST-303	: Data and Computer Communications	First Semester
Text book	: Data and Computer Communications (9th Edition) by William Stallings	
Period	: 45 periods for 15 weeks (3 periods/week) (Lecture + Lab)	

Course Description

The subject is to provide students with the fundamental concepts in computer communications, proceeding from data communications over a data link to transfer of information across local-area networks and wide-area networks. Introduction to Broadband networking concepts, latest broadband networking technologies & protocols. Broadband backbone & access networks, DSL networks, Fiber-to-the-Curb (FTTC) networks, broadband switching architecture & protocols. Traffic management, congestion control, buffering issues, quality of service for broadband networks.

Course Objectives

Upon completing this module, you should be able to:

- describe and justify the OSI Reference Model and the key protocols that govern the Internet.
- program applications and protocols for computer networks.
- illustrate and debate the use and need of cryptographic techniques in network security. (eg the notion of bandwidth, Shannon's law, etc)

Upon completion of this course, students should be able to understand the operation of LAN/WAN and components, Broadband switching architecture/protocols, Asynchronous Transfer Mode multiplexing, Traffic management, Congestion control, Buffering schemes, Queueing models.

Assessment Plan for the Course

Paper Exam:	60%
Attendance:	10%
Test/ Quiz:	10%
Lab:	10%

Tentative Lecture Plan

No.		Chapter	Page	Description
	Section (1) :	Data and Computer Communications		
	Chapter 3	Data Transmission	91-127	
1.	3.1	Concepts and Terminology	92-103	Explain Concept
2.	3.2	Analog and Digital Data Transmission	103-111	Definition
3.	3.3	Transmission Impairments	111-117	Reject Pg115
4.	3.4	Channel Capacity	117-121	Reject Eg 3.5,3.6,3.7,3.8
	Chapter 4	Transmission Media	129-165	
5.	4.1	Guided Transmission Media	130-144	
6.	4.2	Wireless Transmission	144-152	
7.	4.3	Wireless Propagation	152-157	
8.	4.4	Line of Sight Transmission	157-161	
	Chapter 6	Digital Data Communication Techniques	208-235	
9.	6.1	Asynchronous and Synchronous Transmission	210-214	
10.	6.3	Error Detection	214-224	
11.	6.5	Line Configurations	230-231	
	Chapter 7	Data Link Control Protocols	236-257	
12.	7.1	Flow Control	236-244	Figure Only
13.	7.2	Error Control	245-250	Figure Only
14.	7.3	High-Level Data Link Control (HDLC)	251-257	Detail
	Chapter 8	Multiplexing	470-502	

	8.1	Frequency Division Multiplexing	271-277	
	8.2	Synchronous Time Division Multiplexing	277-287	Overview: SONET/SDH
	8.3	Statistical Time Division Multiplexing	287-294	
	8.4	Asymmetric Digital Subscriber Line	294-298	
	Chapter 10	Circuit Switching and Packet Switching	326-347	
	10.5	Packet-Switching Principles	338-347	
	Chapter 15	Local Area Network Overview	470-502	
15.	15.1	Topologies and Transmission Media	471-477	
16.	15.2	LAN Protocol Architecture	477-485	
17.	15.3	Bridges	485-493	
18.	15.4	Hubs and Switches	493-497	
19.	15.5	Virtual LANs	497-501	
	Chapter 16	Ethernet	505-527	
20.	16.1	Traditional Ethernet	507-514	
21.	16.2	High-Speed Ethernet	515-525	
22.	16.3	IEEE 802.1Q VLAN Standards	526-527	
		Practical		
23.	Lab 1	Introduction to Network Devices		
24.	Lab 2	Crimping Ethernet Cables		
25.	Lab 3	Connecting Between Devices Via Switch Using Packet Tracer		