



# AMITY UNIVERSITY

UTTAR PRADESH

Annexure 'AAB-CD-01'

**Course Title: ADVANCED DATA COMMUNICATION NETWORKS**

**Course Code: TELE601**

**Credit Units: 6**

**Level: PG**

**Course Objectives:** The objective of this subject is to provide the adequate knowledge of data communication. It deals with different layers and protocols associated with them, together with the application of it.

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
3	0	4	2	6

**Prerequisites:** Digital Circuits and Systems

Course Contents / Syllabus:		Weightage
<b>1</b>	<b>Module I Network Models</b> Network Models ISO- OSI Reference Model; TCP IP Model; Functions of Layers; comparison of Models. Physical Layer types of media.	<b>20% Weightage</b>
<b>2</b>	<b>Module II Data Link Layer</b> Design Issues, error control, Data Link Control: Framing , Protocols for Noiseless and Noisy Channel; Piggybacking, HDLC, PPP, Multiple Access, Random Access: Pure ALOHA, Slotted ALOHA, CSMA, CSMACD, CSMA/CA , Token Passing Ring,  Wired LANs :IEEE Standards 802.3 Ethernet LANs	<b>25% Weightage</b>
<b>3</b>	<b>Module III Network Layer</b>	<b>35% Weightage</b>

	Logical Addressing: IPv4 Addresses, Class full addresses, Classless addresses, NAT, IPv6 Addresses, Address Mapping : ARP, RARP, BOOTP, DHCP ICMP,IGMP, Routing Protocols: Unicast :RIP,OSPF and Multicast :MOSPF,DVMRP	
<b>4</b>	<b>Module IV Transport Layer and Application Layer</b>	<b>20% Weightage</b>
	UDP, TCP,SCTP  DNS, E mail, HTTP, FTP	

### Student Learning Outcomes:

At the end of the course the student will be able to:

- Explain the importance of data communications and the Internet in supporting business communications and daily activities.
- Explain how communication works in data networks and the Internet.
- Recognize the different internetworking devices and their functions.
- Explain the role of protocols in networking.
- Analyze the services and features of the various layers of data networks.
- Design, calculate, and apply subnet masks and addresses to fulfill networking requirements.
- Analyze the features and operations of various application layer protocols such as Http, DNS, and SMTP.

### Pedagogy for Course Delivery:

The course will be a theoretical and practically teaching. Classroom interaction will definitely have to be an integral part of the learning experience. Tutorial and assignment will be discussed and analyzed in Lab. Students shall also create projects based on application of the subject.

### Lab/ Practicals details, if applicable

List of Experiments:

- Study characteristics of interfaces RJ 11, RJ 45, RS 232C, V.35 USB.RS422, fire wire.
- Crimping of straight cables and cross cables.
- Establishment of Star network using hub.

- Configuration of Layer2 switch.
- Configuration of a Router.
- Establishment of DNS server.
- Establishment of DHCP and Email server.
- Loading and configuration of server 2003 / 2008 and establishment of web and FTP server.
- Capture and analysis of traffic on LAN.
- Establishment and configuration of adhoc wireless networks.

**Assessment/ Examination Scheme:**

<b>Theory L/T (%)</b>	<b>Lab/Practical/Studio (%)</b>	<b>Total</b>
67%	33%	100

**Theory Assessment (L&T):**

<b>Continuous Assessment/Internal Assessment</b>					<b>End Term Examination</b>
<b>Components (Drop down)</b>	<b>Attendance</b>	<b>Class Test</b>	<b>Seminar/Viva/Quiz</b>	<b>Home Assignment</b>	
<b>Weightage (%)</b>	5%	10%	5%	10%	70%

Lab/ Practical/ Studio Assessment:

	Continuous Assessment/Internal Assessment (30%)				End Term Examination (70%)		
Components (Drop down)	Performance	Viva	Attendance		Lab Records	Performance	Viva
Weightage (%)	15%	10%	5%		10%	40%	20%

**Text:**

- Foruzan B. 2005, Data Communication Networking TMH. Tata McGraw Hill
- Andrew Tanerbaum, Computer Networks, Prentice Hall of India 3rd edition
- Black, 1989 V. data Networks, Concepts, theory and Practice. Englewood Chiifs, New Jersey: Prentice Hall
- J.F. Kurose and K.W. Ross, 2003, Computer Networking, A top-down approach featuring the internet, Addison Wesley, 2nd edition