COMPUTER NETWORKS

IV Semester: IT, CSE(CS)

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AITC06	**Core**	3	1	0	4	30	70	100
Contact Classes: 45	**Tutorial Classes: 15**	**Practical Classes: Nil**				**Total Classes: 60**		

Prerequisites: There are no prerequisites to take this course.

I. COURSE OVERVIEW

The main emphasis of this course is on the organization and management of local area networks (LANs) wide area networks (WANs). The course includes learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks. Topics include layered network architectures, addressing, naming, forwarding, routing, communication reliability, the client-server model, and web and email protocols. The applications of this course are to design, implement and maintain a basic computer networks.

II. COURSE OBJECTIVES:

The students will try to learn:

 I. The modern network architectures from a design and performance irrespective.
 II. Understand the basics and challenges of network communication.
 III. Provide an opportunity to do network programming using TCP/IP.
 IV. Understand the operation of the protocols that are used inside the Internet.

III. COURSE SYLLABUS:

MODULE-I INTRODUCTION

Introduction: Networks, network types, internet history, standards and administration; Network models: Protocol layering, TCP/IP protocol suite, the OSI model Transmission media: Introduction, guided media, unguided media; Switching: Introduction, circuit switched networks, packet switching.

MODULE-II DATA LINK LAYER

Introduction: Link layer addressing; Error detection and correction: Cyclic codes, checksum, forward error correction; Data link control: DLC services, data link layer protocols, media access control: Random access, virtual LAN.

MODULE-III NETWORK LAYER

Network layer design issues, routing algorithms, congestion control algorithms, quality of service, and internetworking.
The network layer in the internet: IPv4 addresses, IPv6, internet control protocols, OSPF(Open Shortest Path First), IP (Internet Protocol)

MODULE-IV TRANSPORT LAYER

The transport service, elements of transport protocols, congestion control; The internet transport protocols:UDP (User Datagram Protocol), TCP (Transport Control Protocol), performance problems in computer networks, network performance measurement.

MODULE-V APPLICATION LAYER

Introduction, client server programming, WWW (World Wide Web) and HTTP (Hyper Text Transfer Protocol), FTP (File Transfer Protocol), E-mail, telnet, DNS (Domain Naming System), SNMP (Simple Network Management Protocol).

IV Text Books:

1. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, 5th Edition, 2012.
2. Andrew S. Tanenbaum, David.j.Wetherall, "Computer Networks", Prentice-Hall, 5th Edition, 2010.

V Reference Books:
1. Douglas E. Comer, "Internetworking with TCP/IP ", Prentice-Hall, 5th Edition, 2011.
2. Peterson, Davie, Elsevier, "Computer Networks", 5th Edition,2011
3. Comer, "Computer Networks and Internets with Internet Applications", 4th Edition, 2004.