

Devi Ahilya University, Indore, India Institute of Engineering & Technology			IV Year B.E. (Electronics and Telecommunication)				
Subject Code & Name	Instructions Hours per Week			Credits			
ETR8C2 TELECOM NETWORKS	L	T	P	L	T	P	Total
Duration of Theory Paper: 3 Hours	3	1	0	3	1	0	4

Learning Objectives:

The course contents are aimed to provide:

A detailed working of different telecommunication networks used for accessing broadband.

Prerequisites:

Knowledge of analog communication, digital communication and basics of computer networks.

COURSE CONTENTS

UNIT-I

Introduction : Classification of different wireless and wired telecommunication networks, their comparison, Broadband access, Classification of Legacy broadband technologies, Fixed wired broadband technologies, Fixed wireless broadband technologies, Mobile wireless broadband technologies, Overview of 2G, 3G, 4G & 5G networks, Telecommunication Traffic- unit of traffic, network traffic load and parameters, grade of service and blocking probability.

UNIT-II

Public switched telephone networks (PSTN): Various subsystems of PSTN - subscriber end instruments, subscriber loop systems, transmission system, signalling system, trunk networks. speech digitization, line coding, frame formats used in PSTN, switching.

UNIT-III

Integrated Services Digital Networks (ISDN): Evolution from PSTN, basic principles, architecture and reference points, various frame formats, protocol stack, ISDN services. Broadband ISDN architecture, protocol stack, cell format, BISDN services.

UNIT-IV

Digital subscriber line (DSL): Dial up internet connection, its shortcomings, wired broadband technologies : (DSL), its types ADSL, SDSL, VSDL etc. working principle of DSL, Discrete multi tone modulation, Cable modem & its working principle.

UNIT-V

Optical Access Network: comparison of optical access networks, DSL and cable modem, PON, EPON, GPON and WDM-EPON: overview, principal of operation, architecture, standards; Hybrid Wireless-Optical Broadband Access Network

Learning Outcomes:

Upon completing the course, student will able to learn about various wired and wireless telecommunication networks used for broadband access, their comparison, technologies used in these networks.

BOOKS RECOMMENDED:

- [1]. I S Misra, Wireless Communications and Networks:3G and Beyond, Second Edition, Mc Graw Hill, 2013.
- [2] Thiagrajan Viswanathan, Telecommunications Switching Systems and Networks, PHI, 1998.
- [3] W. Stallings, ISDN and Broad band ISDN with Frame Relay and ATM, Pearson Education, 2005.
- [4]. Shami, Abdallah, Maier, Martin, Assi, Chadi (Eds.), “Broadband Access Networks - Technologies and Deployments”, Springer, 2009.