RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF TECHNOLOGY (B.Tech) DEGREE COURSE
SEMESTER: V (C.B.C.S.)
BRANCH: COMPUTER SCIENCE AND ENGINEERING

Fifth Semester:-

S. N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Artificial Intelligence	3	1	-	30	70	100	4	PCC-CS
2	Artificial I Intelligence-Lab	-	-	2	25	25	50	1	PCC-CS
3	Design & Analysis of Algorithms	3	1	-	30	70	100	4	PCC-CS
4	Design & Analysis of Algorithms –Lab	-	-	2	25	25	50	1	PCC-CS
	Software Engineering & Project Management	3	-	-	30	70	100	3	PCC-CS
5	Elective-I	3	-	-	30	70	100	3	PEC-CS
6	Effective Technical Communication	2	-	-	15	35	50	2	HSMC
7	Profesional Skills Lab I			2	25	25	50	1	ESC
8	Yoga and Meditation (Audit Course)	2	-	-	50	-	-	Audit	MC
	Total	**16**	02	**06**			**600**	**19**	

Elective-I: 1. TCP/IP 2. Design Patterns 3. Data Warehousing and Mining

[Mrs. B. P. Dharaskar]

[Ms. Mona Nilchandani]

Dr. S. V. Sonekar
chairman

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Subject: **Elective 1: TCP/IP** Subject Code: **BTECH_CSE-504.1T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
36 Hrs.	3	30	70	100

Aim: The aim of the course is to provide students with an overview of the field of Internet technologies.

Prerequisite(s): Data Communication, Computer Networks

Course Objectives:

1	To, Create a comprehension of fundamental TCP / IP concepts, and how they function.
2	To, Build understanding of and functionality of TCP / IP protocol set.
3	To, Understand and evaluate various TCP / IP Interface protocols.
4	To, Introduce the student to basic definition of networking and train the students for advanced computer networking courses.

Course Outcomes:

At the end of this course Student are able to:

CO1	Enumerate the layers of the TCP/IP model.
CO2	Analyze the services of TCP/IP protocol and be able to deal with its layers. Also the concepts of IP addressing
CO3	Acquire the knowledge of routing protocols
CO4	Familiarize stuednts with the basic computer network protocols, and how they can be used to help develop and execute networks.
CO5	Generate the solution for basic issues of Internet Mechanism and its security.

SYLLABUS:

Unit I:

Networking Basics, TCP/IP Model, Router, Broadband router, Internet, NAP, ISPs, RFCs and Internet Standards.

Unit II:

IP addressig, Classful and Classless Internet address, CIDR-Subnetting and Supernetting, VLSM , IP Datagram,IP protocol. ARP, RARP, BOOTP, DHCP, VRRC vs HSRP.
IP Routing & Packet Forwarding, RIP, OSPF, EIGRP, ICMP, IGMP.

Unit III:

Protocol-Independent Multicast (PIM), Optical Time-Domain Reflectometer (OTDR).
TCP header, Services, Connection establishment and termination, Interactive data flow, Bulk data flow, Flow control and Retransmission, TCP Timers, Urgent Data processing, Congestion control, Extension headers.

Unit IV:

Switching technology, MPLS fundamentals, signaling protocols, **Carrier Ethernet**, LDP, IP traffic engineering, ECMP, SBR, Routing extensions for traffic engineering, Traffic engineering limitations and future developments.

Unit V:

IP security protocol, IPv6 addresses, Packet format, Multicast, Anycast, ICMPv6, Interoperation between IPv4 and IPv6-QoS, Auto configuration, Stateless address auto configuration (SLAAC), ACL.

Text books:

- TCP/IP Network Administration, Craig Haut, 3rd Edition, Shroff Publications, 2002.
- Internetworking with TCP/IP - Principles, Protocols, and Architecture, Douglas E. Comer, 5th edition Volume-1, Prentice Hall, 2006.
- The Internet and its Protocols- A Comparative approach, Adrian Farrel, Morgan Kaufmann, 2004
- TCP/IP Illustrated - The Protocols, W. Richard Stevens, Volume-1, Pearson Education, 2003.
- TCP/IP Protocol Suite, Behrouz A. Forouzan, 3rd Edition, Tata McGraw Hill, 2006.

Reference books:

- IPv6 Theory, Protocol and Practice, 2nd Edition By, Morgan Kaufmann, 2003.
- Internetworking TCP/IP, Comer D.E and Stevens D.L, Volume 1, 4th Edition, Prentice Hall.
- CCNA Cisco Certified Network Associate Study Guide, 7th Edition by Todd Lammle.