

COURSE CODE	COURSE TITLE	L	T	P	C
1152CS103	NETWORK PROTOCOLS	3	0	0	3

Course Category: Program Elective

A. Preamble:

This Course helps the learners to know the basics of computer networks, TCP/IP protocol indepth considering design alternatives and implementation techniques.

B. Pre-requisites:

Sl. No	Course Code	Course Name
1	1151CS111	Computer Networks
2	1150CS201	Problem Solving using C
3	1151CS102	Data Structures
4	1151CS305	Computer Networks Lab

C. Related Courses:

Sl. No	Course Code	Course Name
1	1152CS101	Cryptography and Network Security.
2	1152CS107	Mobile Adhoc and Sensor Networks.

D. Course Educational Objectives:

Students undergoing this course are exposed to

- Study the internals of the TCP/IP protocols.
- Work how TCP/IP is actually implemented.
- Gain knowledge about the interaction among the protocols in a protocol stack.

E. Course Outcomes :

Upon the successful completion of the course, learners will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
C01	Understand the concept of Internetworking and IP protocols.	K2
C02	Describe the various functions of TCP.	K2
C03	Summarize different routing protocols and understand the mechanism of IP Protocols.	K2
CO4	Understand the TCP implementation using different techniques.	K2
CO5	Describe the timer mechanism, flow control, congestion control of data.	K2

F. Correlation of COs with POs:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO2	PSO 3
CO1.	M	L	L		L			L				M			H
CO2.	H	L	L		M			L				M	L	M	H
CO3	H	L	L	L	M			L				M	M	M	H
CO4	H	M	M	L	M			L				M	L	M	H
CO5	H	L	L	L	L			L				M	L	M	H

H- High; M-Medium; L-Low

G. Course Content :

UNIT I INTRODUCTION 9

Internetworking concepts and architecture model – class ful Internet address – CIDR – Subnetting and Supernetting – AARP – RARP- IP- IP Routing – ICMP – IPV6.

UNIT II TCP 9

Services – header – connection establishment and termination – interactive data flow – bulk data flow – timeout and retransmission – persist timer – keep alive timer – futures and performance.

UNIT III IP IMPLEMENTATION 9

IP global software organization – routing table – routing algorithms – fragmentation and reassembly – error processing (ICMP) – Multicast Processing (IGMP).

UNIT IV TCP IMPLEMENTATION I 9

Data structure and input processing – transmission control blocks – segment format – comparison – finite state machine implementation – Output processing – mutual exclusion – computing the TCP Data length.

UNIT V TCP IMPLEMENTATION II 9

Timers – events and messages – timer process – deleting and inserting timer event – flow control and adaptive retransmission – congestion avoidance and control – urgentdata processing and push function.

Total: 45 Hours

H. Learning Resources:

i. Text Books:

1. Douglas E Comer,” Internetworking with TCP/IP Principles, Protocols and Architecture”, Vol1 ,VIth Edition, Addison-Wesley Professional,2013
2. W.RichardStevens “TCP/IP Illustrated” Pearson Education Vol 1. 2012.

ii. References:

1. Forouzan, “ TCP/IP Protocol Suite” Fourth Edition, Tate MC Graw Hill, 2010.
2. W.Richard Stevens “TCP/IP Illustrated” Volume 2, Pearson Education 2003

iii. Online Resources:

1. www.tcpipguide.com/free/t_toc.htm
2. www.docwiki.cisco.com/wiki/Internetworking_Basics
3. www.repo.hackerzvoice.net/depot_madchat/ebooks/TCP-IP_Illustrated/tcp_tran.html