B.Tech CCE

COURSE PLAN: THEORY COURSE

Department :	INFORMATION AND COMMUNICATION TECHNOLOGY			
Course Name & code :	Computer Networks and Protocols		ICT 2226	
Semester & branch :	IV SEMESTER	B.TECH CCE		
Name of the faculty :	DR. Raghavendra Achar			
No of contact hours/week:	**L**	**T**	**P**	**C**
	3	**0**	**0**	**3**

Course Outcomes (COs) to PO, PSO, BL Mapping

At the end of this course, the student should be able to:		No. of Contact Hours	Marks	Program Outcomes (POs)	PSOs	BL (Recommended)
CO1	Describe the proper usage of various protocols that has been used in the different layers of TCP/IP protocol suite	11	33	1,2,4,12	1,3	4
CO2	Compare the basic protocols of computer networks in network design and implementation.	10	30	1,3,4,12	1,3	4
CO3	Analyze the End-to-End communication and routing mechanisms.	10	27	2,3,4,12	1,3	3
CO4	Apply various application layer protocols to solve challenges in real world scenario.	5	10	1,2,3,4,12	1,3	3
	Total					

CO	Engineering knowledge	Problem analysis	Design/development of solutions	Conduct investigations of complex problems	Enhineering tool usage	The Engineer and the world	Ethics	Individual and team work	Communication	Project management and finance	Life-long learning				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	2	2		2								2	2			
CO2	2		2	2								2	2			
CO3		2	2	2								2	2			
CO4	2	2	2	2								2	2			
Average Articulation Level	2	2	2	2								2	2			

ICT Tools used in delivery and assessment

Sl. No	Name of the ICT tool used	Details of how it is used
1	Lecture delivery	PPT , chalk and board
2	Problem solving	Chalk and board
3	LMS	To upload materials and for conducting assignments.

Mapping of Course Outcomes (COs)/Course Learning Outcomes (CLOs)

At the end of this course, the student should be able to:		No. of Contact Hours	Marks	Program Outcomes(POs)	Learning Outcomes (LOs)	BL (Recommended)
CLO1	Describe the proper usage of various protocols that has	11	33	1,2,4,12	1,2	4

	been used in the different layers of TCP/IP protocol suite					
CLO2	Compare the basic protocols of computer networks in network design and implementation.	10	30	1,3,4,12	1,2	4
CLO3	Analyze the End-to-End communication and routing mechanisms.	10	27	2,3,4,12	1,3	3
CLO4	Apply various application layer protocols to solve challenges in real world scenario.	5	10	1,2,3,4,12	1,3	3
	Total	36	100			

 # Applicable to IET Accredited Programs

Delivery and assessment Plan of LOs #

Learning Outcome (LO) mapped to the course		**Delivery and assessment Plan**
LO	**LO statement**	
1	Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study	Lecture delivery and problem solving
2	Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles	Lecture delivery and problem solving
3	Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed	Lecture delivery and problem solving

 # Applicable to IET Accredited Programs

Assessment Plan (As communicated from o/o AD-A, in every odd semester)

IN – SEMESTER ASSESSMENTS									
Sl. No.	**Assessment Mode**		**Assessment Method**	****Time Duration**	****Marks**	**** Weightage**	**Typology of Questions (Recommended)**	****Schedule**	****Topics Covered**
1	**MISAC**	**1**	**Quiz**	**15 minute**	**5**	**Objective:** 5M 10 MCQs × ½ = 5 marks	Bloom's taxonomy (B) level of the question should be L3 and above.	31-1-25 to 13-2-25	L1-L8
		2	**Mid-Term Test**	**90 minute**		**Objective:** 5M 10 MCQs × ½ = 5 marks Descriptive : 25 Marks	Bloom's taxonomy (BT) level of the question should be L3 and above.	3-3-25 to 8-3-25	L1-L23
		3	**Quiz**	**15 minute**	**5**	**Objective:** 5M 10 MCQs × ½ = 5 marks	Bloom's taxonomy (BT) level of the question should be L3 and above.	19-2-25 to 25-2-25	L9-L16
2	**FISAC**	**1**	**Group Assignment**	******	**5**	*******	Bloom's taxonomy (BT) level of the question should be L3 and above.	18-3-25	
		2	**Group Assignment**	******	**5**	*******	Bloom's taxonomy (BT) level of the question should be L3 and above.	6-4-25	

END – SEMESTER ASSESSMENT							
1	**Regular/Make–Up Exam**	180 Mins	50	Answer all 5 full questions of 10 marks each. Each question can have 3 parts of 2/3/4/5/6 marks.	Bloom's taxonomy (BT) level of the question should be L3 and above.		

** ***Individual faculty will be entering the details***

*** ***Individual faculty shall identify the assessment method from FISAC Assessment method (Table 1 below) and fill in the details.***

NOTE: ***Information provided in the table is as per the In-semester assessment plan notified by Associate Director (Academics).***

Lesson Plan

L No	Topics	Course Outcome Addressed
1	Introduction to OSI Reference model	CO1
2	Switching	CO1
3	Circuit switching at network layer, Network Layer services.	CO2
4	Numerical Problems on switching	CO2
5	Classful addressing	CO1
6	Classless addressing	CO1
7	Classless addressing (contd), Subnetting	CO1
8	Masking, Variable length subnetting, supernetting	CO2
9	Special address	CO1
10	NAT ,IPv6 addressing	CO1
11	Direct and Indirect Delivery	CO2
12	Forwarding	CO2
13	Internet Protocol - Datagram	CO1
14	Datagram Contd.	CO1
15	Fragmentation	CO1
16	Options, Checksum & IP Design	CO1
17	Interior and Exterior routing	CO3
18	Dynamic IP Routing Protocols - RIP	CO3
19	RIP Contd., RIP Version 2	CO3
20	OSPF, Routing between peers – BGP	CO3
21	ARP and RARP	CO2
22	Internet Control Message Protocol - Types of messages, message format	CO2
23	ICMP - Error reporting, query	CO2
24	Introduction to Transport Layer	CO3
25	Introduction to Transport Layer (contd)	CO3
26	Transport Layer Services	CO2
27	Transport Layer Services (contd)	CO2
28	Transport Layer Protocols.	CO3
29	Transport Layer Protocols.	CO3
30	Transport Layer Protocols.	CO3
31	Transport Layer Protocols.	CO3
32	Transport Layer Protocols.	CO3
33	Process-To-Process Communication	CO4
34	User datagram	CO3
35	UDP operation,	CO3
36	Uses of UDP.	CO3
SDL	Introduction to DNS, SMTP, SNMP	CO4
SDL	FTP, HTTP&WWW	CO4

Faculty members teaching the course (if multiple sections exist):

Faculty	Section	Faculty	Section
Dr. Raghavendra Achar	CCE -A		
Dr. Adesh	CCE-B		
Dr. Anoop B N	CCE-C		
Dr. Krishna Prakasha K	CCE-D		

References:

Textbooks	• Behrouz A. Forouzan, *TCP/IP Protocol Suite,* 4th Edition, Tata McGraw Hill 2017. • Andrew S. Tanenbaum, *Computer Network,* 5th Edition Prentice Hall of India Pvt Ltd 2013. • Behrouz A. Forouzan, *Data Communications and Networking,* 5th Edition Tata McGraw Hill 2013. • Leon Garcia and Widjala, *Communication Networks,* 2nd Edition, Tata McGraw Hill 2004.
Self-Directed Learning	
Research Literature/ Case Studies	CISCO Packet Tracer : https://www.netacad.com/cisco-packet-tracer Wireshark : https://www.wireshark.org/ Behrouz A. Forouzan, *TCP/IP Protocol Suite,* 4th Edition, Tata McGraw Hill 2017.
NPTEL/Coursera/any MOOC-based material	• **Computer Networks and Internet Protocol, IIT Kharagpur.** **Link : https://nptel.ac.in/courses/106105183**

Submitted by: Raghu

(Raghavendra Achar)

(Signature of the faculty)

Date: 19/2/25

Approved by:

19/2/25

(Signature of HOD)

Dr. Shantha N. Pai
Professor & Head
Dept. of Information & Communication Technology
MIT, Manipal - 576 104

Flexible In-semester Assessment Component (FISAC):

i) The FISAC 1 & FISAC 2 may be any of the types given in Table 1. However, tne two components should be of different type.

ii) The type of assessment should be informed to the students well in advance.

iii) Syllabus for the last component of In-semester Assessment (ISAC) i.e. FISAC 2 should cover the topics mentioned for self-study if any / topics which are not covered till MISAC 4: In-Semester Exam 2.

Table 1: Flexible In-semester Assessment Component (FISAC)

No	Type	Description
A.	Quiz/MCQs	Same as MISAC 2: Quiz/MCQs
B.	Surprise Assignment	Same as MISAC 3: Surprise assignment.
C.	Take Home Assignment	*10 questions are to be given to each student. *Questions must be of Blooms Taxonomy Level 3 for first year and Level 4 for higher semesters. *Questions are to be given TWO weeks in advance. *Students have to write the answers to all the questions.
D.	Group Assignment	*The students are to be grouped in such a way that there are 3 – 4 students in each group. *Each group is to be given one question. *The questions should be of Blooms Taxonomy Level 4 for first year and Level 5 for higher semesters. *Questions are to be given TWO weeks in advance. *The questions may be in the form of case studies, design, report writing, etc.
E.	Seminar	*Students may be given the topics for seminar relevant to the course of study. *Topics are to be given TWO weeks in advance. *Should be of Blooms Taxonomy Level 4 for first year and Level 5 for higher semesters. *Topics should be related to the courses of study. *Topics should be in the field of recent developments in the courses of study. *Students have to collect the data regarding the seminar topic and submit a report. *Students should make a presentation for about TEN minutes using Power Point.
F.	Quiz / Assignment based on invited talks	*Faculty have to arrange for the invited talk in the emerging areas in the courses of study. *Quiz / Assignment is to be conducted on the topic of the invited talk. *Questions should be at Blooms Taxonomy Level 4 for first year and Level 5 for higher semesters.
G.	Development of Software / Apps	*Faculty has to define the problem statement. *Problem Statements are to be given TWO weeks in advance. *Should be at Blooms Taxonomy Level 4 for first year and Level 5 for higher semesters. *Students have to develop the software / mobile apps using the appropriate software language / platform.
H.	Mini Project	*Faculty has to define the problem statement. *Problem Statements are to be given TWO weeks in advance. *Should be at Blooms Taxonomy Level 4 for first year and Level 5 for higher semesters. *Students have to develop prototypes.