MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	:	Information & Communication Technology
Course Name & code	:	Principles of Data Communication & ICT 2156
Semester & branch	:	III SEM & B.TECH (CCE)
Name of the faculty	:	Ms. Chetana Pujari, Ms. Ipsita
No of contact hours/week:		

L	T	P	C
3	1	0	4

Course Outcomes (COs)

	At the end of this course, the student should be able to:	No. of Contact Hours	Marks
CO1:	Outline the basics of data communication	22	45
CO2:	Compute frame check sequence and error correction codes	7	15
CO3:	Explain data link layer protocol	11	23
CO4:	Compute the performance of media access protocols	8	17
CO5:			
	Total	48	100

Assessment Plan

Components	Assignments	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation	Knowledge/ Recall; Understanding/ Comprehension; Application	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ: 10 questions (0.5 marks) Short Answers: 5 questions (2 marks)	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	4, 7, 10, and 13th week of academic calendar	Calendared activity	Calendared activity
Topics Covered	Quiz 1 (L 1-6 & T 1-2) (CO1)	Test 1 (L 1-17 & T 1-5) (CO 1&2)	Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-4)
	Quiz 2 (L **7-14** & T 3-5) (CO1)		
	Quiz 3 (L 15-24 & T 6-8) (CO2&3)	Test 2 (L 18-30 & T 6-9) (CO 1,2&3)	
	Quiz 4 (L 25-33 & T 9-10) (CO1,3&4)		

Lesson Plan

L. No.	Topics	Course Outcome Addressed
L0	Introduction to the course	
L1	Introduction to data communication	CO1
L2	Signals	CO1
L3	Digital representation of information	CO1
T1	Examples and problems on signals	CO1
L4	Basic properties of data communication system	CO1
L5	Nyquist signaling rate, Shannon channel capacity	CO1
L6	Time and Frequency Domain characterization of communication channel.	CO1
T2	Examples and problems on channel capacity	CO1
L7	Line coding : NRZ, bipolar	CO1
L8	Manchester, Differential Manchester encoding	CO1

L9	Modems and digital modulation- ASK, FSK	CO1
T3	Examples on line coding	CO1
L10	PSK, QAM	CO1
L11	Twisted pair, coaxial cable, Optical fiber	CO1
L12	Wireless Transmssion	CO1
T4	Examples on ASK, FSK, PSK, QAM	CO1
L13	LOS Transmission	CO1
L14	Asynchronous and synchronous transmission	CO1
L15	Error detection and correction : binary	CO2
T5	Examples on transmission media	CO1
L16	Polynomial	CO2
L17	Parit check, Internet checksum	CO2
L18	Polynomial codes, Block codes	CO2
T6	Examples on error detection	CO2
L19	Hamming code	CO2
L20	Peer to peer protocols and service models	CO3
L21	ARQ protocols- Stop and wait	CO3
T7	Examples on error correction	CO2
L22	Go back N	CO3
L23	selective repeat	CO3
L24	Transmission efficiency of ARQ protocols	CO3
T8	Examples on ARQ	CO3
L25	Other adaptation functions- Sliding window flow control	CO3
L26	Sliding window protocol (contd)	CO3
L27	Timing recovery for synchronous services, Reliable stream service	CO3
T9	Examples on sliding window protocol	CO3
L28	Datalink control – HDLC, point to point control	CO3
L29	Multiplexing – FDM, TDM	CO1
L30	STDM	CO1

T10	Examples on multiplexing	CO1
L31	Introduction to layered architecture, protocols	CO4
L32	Approaches to sharing transmission Medium, Random Access Protocols	CO4
L33	Random Access Protocols (contd)	CO4
T11	Examples on random access protocols	CO4
L34	Token Passing protocols, IEEE LAN standards	CO4
L35	Bridges	CO4
L36	MAN[IEEE802.6], FDDI	CO4
T12	Examples on bridges	CO4

References:

1. Stallings W., Data & Computer Communications (9e), Pearson Education Inc., Noida, 2017.
2. Frozen B., Introduction to data communication & networking (4e), Tata McGraw Hill, New Delhi-2014.
3. Garcia A. L., Widjaja I., Communication Networks (2e), Tata McGraw Hill, 2011.
4.
5.
6.
7.

Submitted by: Dr. Raghavendra Achar

(Signature of the faculty)

Date: 26-07-2019

Approved by: DR. BALACHANDRA

(Signature of HOD)

Dr. Balachandra
Professor & Head
Dept. of Information &
Communication Technology
M.I.T., Manipal - 576 104

Date: 26-07-2019

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
Ms. Chetana Pujari	CCE-B		
Ms. Ipsita	CCE-A		

****