Department of Computer Science and Engineering
National Institute of Technology Tiruchirappalli

1. Course Outline			
Course Title	Data Communications and Networks		
Course Code	CSPC27		
Department	CSE	**No. of Credits**	3
Pre-requisites Course Code	NIL	**Faculty Name**	Dr.B.Nithya & L.Priya
E-mail	nithya@nitt.edu lpriya@nitt.edu	**Telephone No.**	0431 – 2503214 9600654258
Course Type	Core Course		

2.Course Overview

This course provides an overview of basic networking concepts such as Reference models, Principles, protocols and standards. It also emphasizes significance of OSI layers and cryptography techniques.

3. Course Objectives

- To provide insight about fundamental concepts and reference models (OSI and TCP/IP) and its functionalists
- To gain comprehensive knowledge about the principles, protocols, and significance of Layers in OSI and TCP/IP.
- To know the implementation of various protocols and cryptography techniques.

4. Course Outcomes (CO)

- Ability to gain insight about basic network theory and layered communication architectures
- Ability to provide solutions to various problems in network theory
- Ability to conceptualize and design a network stack

5. Course Outcome (CO)	**Aligned Programme Outcome (PO)**							
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**
Ability to gain insight about basic network theory and layered communication architectures	S	M	S	M	B	S	M	M
Ability to provide solutions to various problems in network theory	S	S	S	M	S	S	B	S
Ability to conceptualize and design a network stack	S	M	B	M	M	S	B	M

S = 0.6 M = 0.4 B = 0.0

6. Course Teaching and Learning Activities							
S .No	Title	Type		Mode of delivery			
		L	T	C&T	PPT	VL/VC	DEMO
	UNIT I						
1.	Introduction	√		√			
2.	Components, Line configuration, Transmission modes	√		√			
3.	Network Topologies, Categories of Networks	√		√			
4.	OSI Layers: Design issues and design goals	√		√			
5.	Functions of OSI layer, reasons for layered architecture	√		√			
6.	TCP/IP Reference model	√		√			
7.	Transmission media: Guided Media	√		√			
8.	Unguided Media	√		√			
	UNIT II						
9.	Digital and analog Signals,	√		√			
10.	Periodic Analog Signals, Transmission Impairments,	√		√			
11.	Digital data transmission techniques,	√		√			
12.	Analog data transmission techniques,	√		√			
13.	Multiplexing	√		√			
14.	Spread Spectrum	√		√			
	UNIT III						
15.	Error, types, VRC and LRC	√		√			
16.	CRC ,polynomial representation, Error analysis	√		√			
17.	Burst Error, Check sum, Hamming code	√		√			
18.	Flow control: Stop and Wait	√		√	√		
19.	Go Back N, Selective Repeat ARQ	√		√	√		
20.	Solving problems in flow control techniques		√	√			
21.	Sliding window concepts	√		√			
22.	Multiple Access Protocols	√		√			

23.	Ethernet, frame format, addressing encoding	√		√			
24.	Types of Ethernet	√		√			
	UNIT IV						
25.	Network Layer: Services and design goals	√		√			
26.	Packet Switching and Datagram approach	√		√			
27.	IP addressing methods	√		√			
28.	Subnetting	√		√			
29.	Solving problems in IP addressing & subnetting		√	√			
30.	Routing – Distance Vector Routing	√		√			
31.	Link State Routing	√		√			
32.	Broadcast and Mulitcast Routing.	√		√			
	UNIT V						
33.	Transport layer: Services , UDP	√		√			
34.	UDP checksum, TCP, TCP header format	√		√			
35.	TCP connection establishment	√		√	√		
36.	TCP Data Transfer & TCP connection Termination	√		√	√		
37.	Flow and Error control in transport layer, Windows in TCP	√		√			
38.	Cryptography techniques, Classification, Symmetric techniques	√		√			
39.	Symmetric, S-DES	√		√			
40.	RSA	√		√			

7. Course Assessment Methods

Sl. No.	Mode of Assessment	Week/Date	Duration	Marks
1	Cycle Test	After completion of 1st & 2nd units	1 hour	15
2	Quiz	After completion of 3rd & 4th units	1 hour	15
3	Team Project (2 Members)	Feb, March and April Month end (3 Demos)		20
4	End Semester Exam	As Per Academic Schedule	3 hours	50
			Total	100

8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

Text Books

1. Andrew S. Tanenbaum and David J. Wetherall, "Computer Networks", 5 th edition, Prentice Hall, 2011
2. Behrouz A. Foruzan, "Data Communication and Networking", 5 th edition, Science Engineering & Math Publications, 2013

Ref Books:

1.W. Stallings, "Data and Computer Communication", 10 th Edition, Pearson Education, 2014

9. Course Exit Survey

- Feedbacks are collected before every Cycle Test and after the End semester exam in the feedback forms*.
- Suggestions from the students are incorporated for making the course more understanding and interesting.
- Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addresses.
- The students may also give their feedback during Class Committee Meeting.

*** See Annexure 1**

10. Course Policy (including plagiarism, academic honesty, attendance, etc.)

Attendance: Minimum 75% is mandatory to write the end semester examination. Students having attendance 65% to 74% are eligible for the end semester exam only after attending the extra classes and submitting assignments. Students have to redo the course, if they have less than 65% of attendance.

Medical Certificate/ On Duty Certificate should be submitted immediately after rejoining.

11. Additional Course Information

The students can get their doubts clarified at any time with their faculty member with prior appointment.

FOR SENATE'S CONSIDERATION

Course Faculty (B. Nithya) (PRIYA. L) **CC-Chairperson** S. Selvakumar 03 01 17 **HOD** 3/1/2017