

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Course Title	Computer Networks		
Course Code	CSPC53	No. of Credits	3
Course Code of Pre-requisite subject(s)	NIL		
Session	July 2023	Section (if, applicable)	B
Name of Faculty	Dr.B.Nithya	Department	CSE
Email	nithya@nitt.edu	Telephone No.	0431 -2503214
Name of Course Coordinator(s) (if, applicable)	Not applicable		
E-mail	-	Telephone No.	-
Course Type	Core course		
<b>Syllabus (approved in BoS)</b>			
<b>CSPC 53: Computer Networks</b>			
<b>UNIT - I</b>			
Introduction to computer networks: Network –Component and Categories –Topologies –Transmission Media –Reference Models: ISO/OSI Model and TCP/IP Model. *			
<b>UNIT -II</b>			
Physical Layer: Digital and analog Signals, Periodic Analog Signals, Transmission Impairments, Digital data transmission techniques, Analog data transmission techniques, Multiplexing and Spread Spectrum. *			
<b>UNIT-III</b>			
Data Link Layer: Error –Detection and Correction –Parity –LRC-CRC – Hamming Code –Flow Control and Error Control –Stop and wait –ARQ –Sliding window –HDLC – Multiple Access Protocols – IEEE 802.3 Ethernet. *			
<b>UNIT -IV</b>			
Network Layer: Packet Switching and Datagram approach –IP Addressing methods – Subnetting – Routing –Distance Vector Routing –Link State Routing–Broadcast and Multicast Routing. *			
<b>UNIT -V</b>			
Transport Layer: Transport Services –UDP -TCP -Congestion Control –Quality of Services(QOS) Application Layer: Domain Name Space (DNS) –Electronic Mail - WWW –Cryptography Techniques. *			
<b>Text Books</b>			
1.Andrew S. Tanenbaum and David J. Wetherall, “Computer Networks”, 5th edition, Prentice Hall, 2011			
2. Behrouz A. Foruzan, “Data Communication and Networking”, 5th edition, Science			

Engineering& Math Publications, 2013

**Reference Book**

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

**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.

**MAPPING OF COs with POs**

<b>Course Outcomes (CO)</b>	<b>Programme Outcomes(PO)</b>
Gain insight about basic network theory and layered communication architectures	<b>1,8,10</b>
Propose algorithms at the appropriate layer for any communication network task	2,4
Provide solutions to various problems in network theory	<b>2,6</b>
Conceptualize and design a network stack	<b>1,5,7,9,12</b>
Assess the network service quality and applications of cryptography	<b>2,7,11</b>

**COURSE PLAN – PART II**

**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.

**COURSE TEACHING AND LEARNING ACTIVITIES**

<b>S.No.</b>	<b>Contact Hours</b>	<b>Topic</b>	<b>Mode of Delivery</b>
1	2 Contact Hours	Introduction, Components, Line configuration, Transmission modes Network Topologies, Categories of Networks	Chalk & Talk
2	3 Contact Hours	OSI Layers: Design issues and design goals Functions of OSI layer, reasons for layered architecture TCP/IP Reference model	Chalk & Talk

3	2 Contact Hours	Transmission media: Guided Media Unguided Media	Chalk & Talk
4	3 Contact Hours	Application Layer & its function, E-mail system Cryptography techniques, Classification, Symmetric techniques S-DES, RSA	Chalk & Talk
5	4 Contact Hours	Transport layer: Services, UDP, UDP checksum, TCP, TCP header format, TCP connection establishment TCP Data Transfer & TCP connection Termination Flow and Error control in transport layer, Windows in TCP	Chalk & Talk
6	1 Contact Hours	Network Layer: Services and design goals Packet Switching and Datagram approach	Chalk & Talk
7	3 Contact Hours	IP addressing methods Subnetting Solving problems in IP addressing & subnetting	Chalk & Talk
8	3 Contact Hours	Routing – Distance Vector Routing Link State Routing Broadcast and Multicast Routing.	Chalk & Talk
9	3 Contact Hours	Error, types, VRC and LRC CRC ,polynomial representation, Error analysis Burst Error, Check sum, Hamming code	Chalk & Talk
10	3 Contact Hours	Flow control: Stop and Wait Go Back N, Selective Repeat ARQ Solving problems in flow control techniques	Chalk & Talk
11	4 Contact Hours	Sliding window concepts Multiple Access Protocols Ethernet, frame format, addressing encoding Types of Ethernet	Chalk & Talk
12	2 Contact Hours	Digital and analog Signals, Periodic Analog Signals, Transmission Impairments, Digital data transmission techniques,	Chalk & Talk
13	2 Contact Hours	Analog data transmission techniques, Multiplexing Spread Spectrum	Chalk & Talk
<b>COURSE ASSESSMENT METHODS (shall range from 4 to 6)</b>			

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	As per schedule	1hr	20
2	Cycle Test 2	As per schedule	1hr	20
3	Assignment	Demo		10
CPA	Retest	After all Cycle tests	1hr	20
4	Final Assessment *	As per Schedule	2hrs	50

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

- Feedbacks are collected before final examination through MIS or any other standard format followed by the institute
- Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during Class Committee Meeting.

**COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)**

**MODE OF CORRESPONDENCE (email/ phone etc)**

E-mail/Phone

**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.

**COMPENSATION ASSESSMENT**

- One compensation assessment will be given after completion of Cycle Test 1 and 2 for the students those who are absent for any assessments due to genuine reason.
- The prior permission and required document must be submitted for the absence.

**ACADEMIC HONESTY & PLAGIARISM**

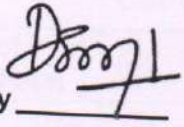
- Avoid usage of electronic devices during the class or test or exam.
- The students are expected to come out with their original solution for the problems given in the assignment. If found to copy from internet/other students, marks will be reduced.


**ADDITIONAL INFORMATION**

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

appointment.

FOR APPROVAL

Course Faculty 

CC-Chairperson 

HOD 