NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLICOURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech and CSE**		
Course Title	**Data Communications and Networks**		
Course Code	**CSPC27**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	**Nil**		
Session	**JANUARY 2019**	**Section (if, applicable)**	**B**
Name of Faculty	**Ms. B.PREETHA**	**Department**	**CSE**
Email	**preetha@nitt.edu**	**Telephone No.**	**-**
Name of Course Coordinator(s) (if, applicable)	**Not Applicable**		
E-mail	**Nil**	**Telephone No.**	**Nil**
Course Type	✓ **Core course**	☐ **Elective course**	

Syllabus (approved in Senate)

UNIT- I

Introduction to computer networks: Network – Component and Categories – Topologies – Transmission Media – Reference Models: ISO/OSI Model and TCP/IP Model.

UNIT-II

Physical Layer: Digital and analog Signals, Periodic Analog Signals, Transmission Impairments, Digital data transmission techniques, Analog data transmission techniques, Multiplexing and Spread Spectrum.

UNIT-III

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.

UNIT-IV

Network Layer: Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Broadcast and Multicast Routing.

UNIT-V

Transport Layer: Transport Services – UDP -TCP - Congestion Control – Quality of Services(QOS) **Application Layer:** Domain Name Space (DNS) – Electronic Mail - WWW – Cryptography Techniques.

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.

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.

Course Outcomes	Aligned Programme Outcomes (PO)
1. Ability to gain insight about basic network theory and layered communication architectures.	1, 3, 6
2. Ability to provide solutions to various problems in network theory.	1, 2, 3, 5, 6, 8
3. Ability to conceptualize and design a network stack.	1, 6

COURSE PLAN – PART II

COURSE OVERVIEW

This course mainly describes about the basic concepts of computer networks such as reference models (ISO-OSI, TCP/IP) and functions of each and every layer in the reference model .It also provide introduction to the cryptographic techniques.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1.	I WEEK	Data Communication, Component, Transmission Mode, Line Configuration, Network Topology, Categories of networks.	Chalk and Talk
2.	II WEEK	ISO/OSI Model-Functions of each layer, TCP/IP Reference Model.	Chalk and Talk
3.	III WEEK	Transmission Media-Guided and Unguided Media. Digital and analog Signals, Periodic Analog Signals	Chalk and Talk
4.	IV WEEK	Transmission Impairments, Digital data transmission techniques, Analog data transmission techniques, Multiplexing.	Chalk and Talk
5.	V WEEK	Spread Spectrum. Error Detection and Correction: Types of Error, Parity Check, LRC, CRC, Checksum.	Chalk and Talk

6.	VI WEEK	Hamming Code .Flow Control and Error control –:Stop and wait protocol , Sliding window protocol: Go back N.	PPT
7.	VII WEEK	Selective Repeat ARQ, HDLC, Multiple Access Protocols-IEEE 802.3 Ethernet.	Chalk and Talk
8.	VIII WEEK	Packet Switching and Datagram approach, IP addressing methods.	Chalk and Talk
9.	IX WEEK	Subnetting, Problems in IP addressing Routing, Distance Vector Routing.	Chalk and Talk
10.	X WEEK	Link State Routing, Broadcast and Multicast Routing.	Chalk and Talk
11.	XI WEEK	Transport Layer: Services, UDP,UDP checksum , TCP, TCP Header,	Chalk and Talk
12.	XII WEEK	TCP Connection Establishment ,TCP Congestion Control ,Quality of Services(QOS)	PPT
13.	XIII WEEK	**Application Layer:** Domain Name Space (DNS), Electronic Mail.	Chalk and Talk
14.	XIV WEEK	WWW, Cryptography Techniques.	Chalk and Talk

COURSE ASSESSMENT METHODS-THEORY (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test-1	3rd week of Feb	1 hour	20%
2	Assignment 1*	1st week of Feb	-	5%
3	Cycle Test-2	1st week of April	1 hour	20%
4	Assignment 2*	2nd week of March	-	5%
CPA	Compensation Assessment*	4th week of April	1 hour	20%
5	Final Assessment*	2nd week of May	3 hours	50%
TOTAL				**100%**

***mandatory**

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

1. Students' feedback through class committee meetings.
2. Feedback questionnaire from students – from MIS at the end of the semester.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)
Mode of Correspondence through Phone.

COMPENSATION ASSESSMENT POLICY
In case of emergency, the student should submit compensatory assignments on submission of appropriate documents as proof. Compensatory assessments would be framed according to the time frame available and the assessment task missed by the students.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmers.

ADDITIONAL INFORMATION

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

FOR APPROVAL

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____ 29/1/19