National Institute of Technology – Tiruchirappalli
Department of Computer Applications

COURSE PLAN

1. Course Outline

Course Title	Computer Networks		
Course Code	CA727		
Department	CA	**No. of Credits**	3
Pre-requisite Couse Codes	CA717, CA715	**Faculty Name**	Dr. N.P. Gopalan
Course Coordinator	Dr. U. Srinivasulu Reddy		
E-Mail	npgopalan@nitt.edu	**Telephone No.**	9443416970
Course Types	Core Course		

2. Course Overview

Computer networks course provides an overview of basic networking concepts, including network architecture, models, protocols and standards. It affords the basis of client server applications and to put on them in various academic / industrial applications. Only with the help of computer networks can a borderless communication and information environment be built.

3. Course Objectives

- To be familiar with existing state-of-the-art in network protocols, architectures, and applications.
- To gain comprehensive knowledge about the layered communication architectures and its functionalities.
- To understand the principles, key protocols, design issues and significance of various layers.

4. Course Outcomes (CO)

Students will be able to:

- List the functionalities of networking layers of both OSI and TCP/IP reference model
- Explain design issues of DLL and techniques to resolve it
- Describe the principles of switching and routing algorithms
- Distinguish TCP and UDP related formats, procedures

5. Course Outcome(CO)	Aligned Programme Outcome (PO)											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**
List the functionalities of networking layers of both OSI and TCP/IP reference model	**H**			**M**								
Explain design issues of DLL and techniques to resolve it			**H**	**L**	**M**							
Describe the principles of switching and routing algorithms	**H**			**M**			**H**					
Distinguish TCP and UDP related formats, procedures	**H**				**H**		**H**					

6. Course Teaching and Learning Activities

Week	No. of Classes	Topics Covered	Mode of Delivery
1.	Class-1	Introduction to Computer Networks	Chalk, Talk and PPT
	Class-2	Building a network, Requirements	Chalk, Talk and PPT
	Class-3	Data representation, Data Flow, Physical structure	Chalk, Talk and PPT
2.	Class-1	Network Models – LAN, MAN, WAN	Chalk, Talk and PPT
	Class-2	The Internet, Network Architecture	Chalk, Talk and PPT
	Class-3	Physical Layer, Datalink layer – Functionalities	Chalk, Talk and PPT
3.	Class-1	Transport layer, Network layer - Functionalities	Chalk, Talk and PPT

	Class-2	Sessions, Presentation, Application layers – Functionalities	Chalk, Talk and PPT
	Class-3	LAN architecture – Star, Ring, Bus Tree	Chalk, Talk and PPT
4.	Class-1	Wireless Networks	Chalk, Talk and PPT
	Class-2	Ethernet, Token Ring	Chalk, Talk and PPT
	Class-3	Introduction to error detection techniques	Chalk, Talk and PPT
5.	Class-1	LRC, VRC, CRC – techniques	Chalk, Talk and PPT
	Class-2	Exercise Problem related to error detection	Chalk, Talk and PPT
	Class-3	Checksum – Exercise Problems	Chalk, Talk and PPT
6.	Class-1	Hamming Distance for error correction	Chalk, Talk and PPT
	Class-2	Exercise problems on Hamming code	Chalk, Talk and PPT
	Class-3	Switching techniques – packet switching	Chalk, Talk and PPT
7.	Class-1	Virtual circuit switching, Datagram Delay and forwarding efficiency, Bridges	Chalk, Talk and PPT
	Class-2	LAN switches, introduction to internetworking	Chalk, Talk and PPT
	Class-3	Simple internetworking, Routing	Chalk, Talk and PPT
8.	Class-1	Selective routing protocol specification	Chalk, Talk and PPT
	Class-2	Reliable Byte Stream (TCP)	Chalk, Talk and PPT
	Class-3	TCP congestion control, UDP	Chalk, Talk and PPT
9.	Class-1	Congestion avoidance mechanisms	Chalk, Talk and PPT
	Class-2	Streaming Protocol	Chalk, Talk and PPT
	Class-3	Domain Name Service (DNS), Distribution of Name Space, DNS in internet, Messages	PPT
10.	Class-1	E-Mail, Simple Mail Transfer Protocol (SMTP)	PPT
	Class-2	Multipurpose Internet Mail Extension (MIME) Protocol, HTTP	PPT
	Class-3	SNMP, TELNET	PPT
11.	Class-1	FTP	PPT

7. Course Assessment Methods - Theory

Sl. No.	Mode of Assessment	Week/ Date	Duration	Weightage (%)
1.	Cycle Test – 1	6th week	60 Mins	20
2.	Cycle Test – 2	12th week	60 Mins	20
3.	Assignment	7th week, 10th week	7 Days	10
4.	End Semester Exam	-	180 Mins	50
			Total	100

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

REFERENCES:

1. Behrouz A. Forouzan, "Data Communications and Networking", 4th Edition, McGraw-Hill, 2004.
2. William Stallings, "Data and Computer Communications", 9th Edition, Pearson, 2011.
3. Larry L. Peterson and Bruce S. Davie, "Computer Networks - A systems Approach",5th Edition, Harcourt Asia/Morgan Kaufmann, 2011.
4. James F. Kurose and Keith W. Ross, "Computer Networking - A Top Down Approach",5th Edition, Addison Wesley, 2009.
5. Andrew S. Tanenbaum, "Computer Networks", 5th Edition, Prentice Hall, 2012.

9. Course Exit Survey (Mention the ways by which the feedback about the course is assessed and indicate the attainment level)

- The students through the class representative may give their feedback at any time to the course coordinator which will be duly addressed.
- The students may also give their feedback during class committee meeting.
- 'Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback 'on various rubrics will be analyzed.
- The COs will be computed after arriving at the final marks.

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

- **Plagiarism**
  The students are expected to come out with their original code for problems given assignments during the class work, and tests / examinations. If found to copy from internet / other students, zero marks will be assigned.
- **Attendance**
  100% is a must. However, relaxation will be given for leave on emergency requirements (medical, death, etc.) and representing institute events. Minimum 75% is required.
- **Academic Honesty**
  - **i)** Possession of any electronic device, if any, found during the test or exam, the student will be debarred for 3 years from appearing for the exam and this will be printed in the Grade statements / transcripts.
  - **ii)** Tampering of MIS records, if any, found, then the results of the student will be with held and the student will not be allowed for the placement interviews conducted by the office of training & placement, besides (i).

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

(Dr. N. P. Gopalan)	**(Dr. U. Srinivasulu Reddy)**	**(Dr. S.R. Balasundaram)**
Course Faculty	Chairperson	HoD