



**Course Title:** Data Communication & Computer Networks  
**Credit Units:** 04  
**Course Level:** Under Graduate  
**Course Code:** CSE302

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
2	0	2	2	4

**Course Objectives:**

The objective is to acquaint the students with the basics of data communication and networking. A structured approach to explain how networks work from the inside out is being covered. The physical layer of networking, computer hardware and transmission systems have been explained. In-depth application coverage includes email, the domain name system; the World Wide Web (both client- and server-side); and multimedia (including voice over IP).

**Pre-requisites:**

Basic & Advance knowledge of Computer Networks

**Course Contents/Syllabus:**

	Weightage (%)
<b>Module I :</b> <b>Introduction</b> Introduction to computer networks, evolution of computer networks and its uses, reference models, example network physical layer: Theoretical basis for data communication, transmission media, wireless transmission, telecom infrastructure PSTN, communication satellites, mobile telephone system	20%
<b>Module II :</b> <b>The data link layer</b> Data link layer design issues, error detection and correction, data link protocols, sliding window protocols, example of link protocols- HDLC, PPP Access	20%
<b>Module III:</b> <b>Medium access layer</b> Channel allocation problem, multiple access protocols, ALOHA, CSMA/CD, IEEE Standard 802 for LAN and MAN, B	20%

<b>Module IV :</b>	
<b>The Network layer</b> Network layer concepts, design issues, static and dynamic routing algorithms, shortest path routing, flooding, distance vector routing, link state routing, distance vector routing, multicast routing, congestion control algorithm, internetworking, Ipv	20% routing,
<b>Module V :</b>	
<b>The Transport layer</b> The transport services, elements of transport protocols, TCP and UDP. The application layer: Brief introduction and session layer, DNS, E-mail, WWW	20% presentation and

**Student Learning Outcomes: After completion of this course student will be able to**

- Apply knowledge of mathematics, science, engineering and computing appropriate to the discipline.
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- Apply design and development principles in the construction of software systems of varying complexity.

**Pedagogy for Course Delivery:**

1. Classroom teaching using White board and Presentations.
2. Assignments and Tutorials for continuous assessment.

**LAB:**

1. Installation of Linux.
2. Linux Command.
3. Establish a straight Configuration for LAN.
4. Establish a crossover Configuration for LAN.
5. Establish a Rollover Configuration for LAN.
6. Write a Program that Translate between 32-bit number and dotted decimal form.
7. Write a Program that read an IP address in dotted decimal form, determine whether the address is A, B or C(classes).
8. Extend the above program to handle class D and E.

9. Write a Program to find shortest path using Dijkstra algorithm.
10. Write a Program to find shortest path using Bellman algorithm.
11. Write a program in C for pure Aloha.
12. Write a program in C for slotted Aloha.
13. Write a program to generate Hamming code and Check if the received codeword is correct.

**Examination Scheme:**

**Assessment/ Examination Scheme:**

Theory L/T (%)	Lab/Practical/Studio (%)	Total
75%	25%	100

**Lab:**

Continuous Assessment/Internal Assessment					End Term Examination
Component s (Drop down)	Attendance	Class Test	Home Assignment	Case Study	
Weightage (%)	5	10	7	8	70%

**Lab Assessment**

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Attendance	Lab Record	Performance	Viva	
Weightage (%)	5	10	10	5	70

## **Text & References:**

### *Text:*

1. *Computer networks: Tanenbaum, Andrew S, Prentice Hall*
2. *Data communication & networking: Forouzan, B. A.*

### *References:*

1. *Computer network protocol standard and interface: Uyles, Black*
2. *Data and Computer Communications, Seventh Edition (7th.) William Stallings Publisher: Prentice Hall Computer Networking: A Top-Down Approach Featuring the Internet (3rd Edition) by James F. Kurose*