

Diploma Branches in which this subject is offered: Computer Engineering

Objective: This subject will help to understand fundamental concepts of computer networking. Make students knowledgeable about basic taxonomy and terminology of the computer networking area. Offers advanced networking concepts, preparing the student for entry Advanced courses in computer networking

Credits Earned: 2 Credits

Course Outcomes: After completion of this course, student will be able to

- Understand the concept of data communication.
- Integrate PC into LAN.
- Know different network classification based on different category.
- Acquire the knowledge of different network devices.

Pre-requisite of course: NA.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
0	0	4	2	00	30	20	25	25	100



Contents:

Unit	Topics	Contact Hours
1	Introduction: Overview of computer network, usage of computer network, line configuration-point-to-point, multi point, types of server	5
2	Data Communication: Data flow-simplex, half duplex, full duplex, topology-star, bus, mess, ring, hybrid, pros and cons of each topology	5
3	Cabling: Introduction to network cabling, Unshielded Twisted Pair (UTP) Cable, Shielded Twisted Pair (STP) Cable, Coaxial Cable, Fiber Optic Cable	4
4	Types of network: Importance of computer network, Local Area Network(LAN), virtual LAN(VLAN), Controller Area Network(CAN), Metropolitan Area Network(MAN), Wide Area Network(WAN), Internet and Intranet, extranet	6
5	Transmission media: Types of transmission media, Guided transmission media-twisted pair, coaxial cable, optical fiber, magnetic media, Unguided transmission media-light transmission, microwave transmission, radio transmission, infrared transmission	3
6	Network devices: Working of Networking Components – Hubs , Bridges, Switches (Manageable and Non-Manageable), Switching and Forwarding Routers, Gateways, Access Point, Modem, Wi-fi-Router.	5
	Total Hours	28

References:

1. Behrouz A. Forouzen, “Data Communication and networking”, Tata McGraw Hill, fifth edition.
2. Andrew S. Tanenbaum, “Computer Networks”, Pearson Publications, fifth edition.
3. Achyut S. Godbole, “Computer Communication Networks”, Tata McGraw Hill.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
35%	35%	30%	0%	0%	0%

Suggested List of Experiments:

1. Study different types of network and generate report.
2. Prepare a summary report about data communication using examples.
3. Study different network topologies and make summary report about it.
4. Configure any two network topology in Cisco packet tracer software.
5. Study of different types of network cable and practically implement the crossed-wired cable and straight through cable using clamping tool.
6. Learn the concept of LAN, VLAN, WAN, CAN, MAN.
7. Setup LAN Connection in Cisco packet tracer software.
8. Setup Wireless Network.
9. Study of networking devices.
10. Setup Hub, switch and router in Cisco packet tracer software.
11. Setup access point.
12. Study different types of transmission mode.
13. Simulate HTTP, DNS and Email on terminal in Cisco packet tracer software.
14. Setup DHCP server in Cisco packet tracer software.

Instructional Method:

- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory