

Course Name	DATA COMMUNICATION & COMPUTER NETWORKS	Course Code	ITEC-251		
Credit Hours	3	Contact Hours	Lec	Lab	Total
			2	2	4
Offered as	<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Program Requirement <input checked="" type="checkbox"/> Core <input type="checkbox"/> Elective <input checked="" type="checkbox"/> ITEC <input checked="" type="checkbox"/> COMP <input type="checkbox"/> CNET				
Level	4	Prerequisite	NIL		

Course Description:

This is an entry-level course in data communication and networking. This course explains the students with the fundamentals of data communications and networking in detail. The topics include fundamentals of data communications: essential elements of data communications: simplex, half-duplex and full duplex transmission, basic concepts of networking: network criteria, network applications and benefits. Configurations, and categories of networks: line configuration, network topologies (mesh, star, tree, bus, ring, hybrid), internetwork or internet, types of network connection, intranet, and extranet. Introduction to OSI and TCP/IP network models: The OSI Model, The OSI layers, TCP/IP Protocol Suite in detail. Physical layer and media: analog and digital signals, periodic and non-periodic signals, signal parameters, time and frequency domains concepts, transmission impairment, transmission media: guided media, unguided media, circuit, and packet switching. Data link layer control: framing, error control and flow control, error detection and correction techniques: VRC, LRC, CRC, checksum, and Hamming code techniques. Wired LAN (Ethernet), IP addressing, subnetting, supernetting. networking and internetworking devices, and VLANs. Students will be trained on the existing components and products related to Cisco such as wireless networking, switches, routers, bridges, gateways, repeaters, hubs, cellular communication, and satellite communication.

After successfully completing this course, students will be able to:

- ◆ Explain the fundamental concepts of data communication and networking.
- ◆ Describe the layering concepts, network models e.g., Open System Interconnect (OSI) and the Internet Model (TCP/IP).
- ◆ Analyze analog and digital transmission techniques, including flow control, error detection, and error correction methods.
- ◆ Identify various types of transmission media, network devices, and performance assessment parameters for each guided and unguided media and connecting device. Also, discuss Ethernet and wireless networks.
- ◆ Apply the skills acquired concerning physical (MAC) and logical addressing (IP), subnetting and supernetting, network topologies, and VLANs.

Assessment Methods	<input checked="" type="checkbox"/> Midterm	15%	<input checked="" type="checkbox"/> Assignment-01	10%	<input checked="" type="checkbox"/> Assignment-02	15%
	<input checked="" type="checkbox"/> Lab Tasks/Lab Assignment	10%	<input checked="" type="checkbox"/> Final Lab	10%	<input checked="" type="checkbox"/> Final Theory	40%

Textbook:

- ◆ Behrouz A Forouzan, Data Communications and Networking, 6th Edition, 2022, ISBN-13: 978-1-26-436335-3

References:

- ✚ William Stallings,” Data and Computer Communication”, Pearson Education, 10th Edition, 2014, ISBN-13: 9781292014388
- ✚ James Kurose, “Computer Networking: A Top-Down Approach”, Pearson, 8th Edition, 2021, ISBN-13: 9780136681557
- ✚ Larry Peterson, “Computer Networks: A Systems Approach”, Morgan Kaufmann, 6th Edition, 2022, ISBN-13: 9780128182000
- ✚ Andrew Tanenbaum, “Computer Networks”, 6th Edition, 2021, ISBN 13: 9781292374062