

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Diploma Engineering				Branch	INFORMATION TECHNOLOGY			
Semester	IV				Version	1.0.0.0			
Effective from Academic Year	2018-19			Effective for the batch Admitted in	June 2018				
Subject code	1IT2401		Subject Name	DATA COMMUNICATION AND NETWORK					
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:
Knowledge of analog and digital electronics.

Course Learning Outcomes:
<p>The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:</p> <ul style="list-style-type: none"> <li>• Understanding what data communication is and networking.</li> <li>• Understand OSI and TCP/IP model</li> <li>• Describe the different kind of signals, frequency.</li> <li>• Identify the important of ADC and DAC.</li> <li>• To understand the use of AM, FM, TDM and multiplexing application.</li> <li>• Importance of transmission media in data communication.</li> </ul> <p>Describe the importance of connecting devices. The practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate course learning outcomes.</p>

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
UNIT – 1 Introduction to data communication and networking	1.1. Data Communication 1.2. Networks Protocols and Standards, Standards Organizations. 1.3. Line Configuration, 1.4. Topology, 1.5. Transmission Modes, 1.6. Categories of Networks	1.1. Describe data communication model. 1.2. Describe data standard and organizations. 1.3. Describe what Line configuration is. 1.4. Describe the topology 1.5. Describe the transmission modes. 1.6. Describe the categories of computer network.	10	8

UNIT – 2 OSI and TCP/IP protocol suit	2.1. OSI Model Functions of the layers, 2.2. TCP/IP Protocol Suites, 2.3. Addressing Modes, Sub and Super netting	2.1. Describe the Functions of OSI model. 2.2. Describe the TCP/IP model. 2.3. State the use of the Addressing modes.	12	5
UNIT -3 Types of transmission media	3.1. Guided Media, Unguided Media, 3.2. Transmission Impairments, Performance, Wavelength , Shannon Capacity 3.3. Media Comparison	3.1. Describe guided and unguided media. 3.2. Describe transmissions. 3.3. Describe media comparison.	8	6
UNIT – 4 Signals	4.1. Analog and Digital 4.2. Periodic and aperiodic Signals, 4.3. Analog Signals, Digital Signals 4.4. Time and Frequency Domains 4.5. Composite Signals	4.1. Describe the analog to digital. 4.2. Classify periodic and aperiodic signal. 4.3. Describe Time and frequency Domain. 4.4. Describe Composite signals.	8	7
UNIT – 5 Digital and Analog transmission	5.1. Digital to Digital Conversion, 5.2. Analog to Digital Conversion 5.3. Digital to Analog Conversion 5.4. Analog to Analog Conversion	5.1. Describe Digital to Digital conversing. 5.2. Describe Analog to Digital conversion. 5.3. Describe Digital to analog conversion. 5.4. Describe Analog to Analog conversion.	6	7
UNIT – 6 Multiplexing	6.1. Many to one,one to Many, 6.2. AM,FM, Frequency division Multiplexing, Time division Multiplexing, 6.3. Multiplexing applications	6.1. Describe many to one and one to many communications. 6.2. Describe AM,FM,FDM,TDM 6.3. List and describe Multiplexing application.	8	6
UNIT – 7 Introduction to networks and devices	7.1. Network Devices: Repeaters, Hub, Bridges , Switches, Routers, Gateways	7.1. Describe the network devices like Repeater, hub, bridge, switch, router, gateways.	8	6

List of Practical		
No.	Unit	Name of Practical
1	UNIT 2	To demonstrate the use of the TCP/IP setting in PC.
2	UNIT 7	To demonstrate the use of the Networking devices.
3	UNIT 7	To build small network using the different networking devices.
4	UNIT 1	To build the computer system which able to access the internet.
5	UNIT 5	To build the small communication system which use the analog communications.
6	UNIT 5	To build the communication system which use the digital system.
7	UNIT 6	To demonstrate the different multiplexing system.
8	UNIT 4	To measure the different criteria for analog and digital signal.

9	UNIT 3	To demonstrate the use of the different transmission media.
10	UNIT	To demonstrate the use of the Class full and classless addressing.
11	UNIT	To create the sub netting of network.

List of Instruments / Equipment / Trainer Board	
1	Trainer kit for Modulation.
2	Different kind of Cables.
3	Switch, Router
4	Computer Systems.
5	Crimping Tools, Cable Tester.

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Data Communications and Networking	Forouzan	
2	Computer Networks	Tanenbaum Andrew S	Pearson
3	TCP/IP Protocol Suite	Behrouz A. Forouzan	MGH

Link of Learning Web Resource	
1	<a href="https://www.studytonight.com/computer-networks/">https://www.studytonight.com/computer-networks/</a>
2	<a href="https://www.tutorialspoint.com/data_communication_computer_network/">https://www.tutorialspoint.com/data_communication_computer_network/</a>