	National Institute of Technology Meghalaya An Institute of National Importance	**CURRICULUM**

Programme	**Bachelor of Technology in Computer Science and Engineering**	Year of Regulation	**2019-20**
Department	**Computer Science and Engineering**	Semester	**IV**

Course Code	Course Name	Credit Structure				Marks Distribution		
		L	T	P	C	Continuous Evaluation	Lab Test/ Viva	Total
CS256	**Data Communication Lab**	**0**	**1**	**2**	**2**	**70**	**30**	**100**

Course Objectives	Course Outcomes	
To introduce the components of Data Communication	CO1	**Able to learn the fundamentals of data communication**
To analyse the Analog and Digital Transmission	CO2	**Able to Understand the digital signal and analog signal transmission over different types of transmission media.**
To describe the structure of Physical and Data Link Layer	CO3	**Able to distinguish different techniques of error detection and correction and medium access control.**
To describe the function of wireless networks	CO4	**Able to acquire knowledge about the generations of wireless networks.**

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**
2	CO2	**2**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**1**
3	CO3	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**
4	CO4	**1**	**1**	**2**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**1**

SYLLABUS

No.	Content	Hours	COs
I	Study and discussion on various Computer network commands such as Ping, Netstat, Tracert, ARP, Nbtstat, Netsh and execution of the commands.	**03**	**CO1 CO2 CO3 CO4**
II	Installation and Setup of Packet Tracer Tool. Study and execution of basic commands of Packet Tracer such as Traceroute, ifconfig, Telnet and others.	**03**	
III	Setting up a Local Area Network in Packet Tracer with Static Routing – (i) Static Routing without CLI and (ii) Static Routing with CLI.	**03**	
IV	Initialization and Setting up a Router with Encryption in Packet Tracer.	**03**	
V	Configuration of DHCP Server and Network Address Translation in Packet Tracer.	**06**	
VI	(i) To understand the working of LAN Trainer kit. (ii) Stop & Wait Protocol implementation on LAN Trainer kit. (iii) Go-Back N Protocol implementation on LAN Trainer kit. (iv) Selective-Repeat Protocol implementation on LAN Trainer kit.	**09**	
VII	Data Transmission through wired and wireless communication without any outside support.	**06**	
VII	Setting a local server for access of files	**03**	
	To be done necessarily as mini-project group-wise in groups of at least two/three students.		
	Total Hours	**36**	

Essential Readings

1. Behrouz A Forouzan, “Data Communication and Networking”, 5th Edition, McGraw-Hill Education, 2018.
2. Andrew S Tanenbaum, David J. Wetherall “Computer Networks”, 5th Edition, Prentice Hall. 2011.
3. William Stallings, “Data and Computer Communication”, 10th Edition, Pearson, 2017.
4. A Jesin, “Packet Tracer Network Simulator”, 1st Edition, Packt Publishing Ltd., 2014.

Supplementary Readings

1. James F Kurose, Kaith W Ross, “Computer Networking | A Top-Down Approach”, 6th Edition, Pearson, 2017.
2. A L Garcia, I Widjaja, “Communication Networks: Fundamental Concepts and Key Architectures”, 2nd Edition, Tata McGraw Hill, 2017.
3. B. Buchanan, “The Handbook of Data Communications and Networks”, 1st Edition, Springer, 2004.
4. James F Kurose, Kaith W Ross, “Computer Networking | A Top-Down Approach”, 6th Edition, Pearson, 2017.