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	INT	MID	END	Total
CS206	**Data Communication**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

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	**Overview** **Objectives and Applications of Computer Communication. Computer Communication Network Architecture: ISO - OSI reference model, design philosophy, layer, protocol, interface, and service concepts. Layer - wise functionality**	**06**	**CO1, CO4**
II	**Physical Layer** **Concepts of Data and Signals, Analog and Digital Data Transmission, Bandwidth utilization: Multiplexing techniques, Transmission Media, Switching Techniques and Telephone and Cable Networks for Data transmission.**	**12**	**CO2**
III	**Data Link Layer** **Framing and Coding techniques, Error Detecting and Correcting Codes, data link control protocols and their performances. Medium Access Control in broadcast networks : ALOHA, CSMA, CSMA/CD, token ring, token bus.**	**12**	**CO3**
IV	**Wired and Wireless LANs** **Ethernet, Connecting Devices, Backbone Networks, Standard LAN Protocols (IEEE 802.X). Wireless LANs and WANs : IEEE 802.11, Bluetooth, Cellular telephony, satellite networks. SONET/SDH, Frame Relay and ATM.**	**06**	**CO4**
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.

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.