	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Bachelor of Technology in Electronics and Communication Engineering**	Year of Regulation	**2018-19**
Department	**Electronics and Communication Engineering**	Semester	**V**

Course Code	Course Name	Credit Structure				Marks Distribution		
		L	T	P	C	CONTINOUS EVALUATION	VIVA	Total
EC 351	**Analog and Digital Communication Systems Laboratory**	**0**	**1**	**2**	**2**	**70**	**30**	**100**

Course Objectives		Course Outcomes		
	To develop the student's ability to analyse and design Analog Communication systems		CO1	Able to develop Analog Communication Systems using simulation tools/hardware kit
	To develop the student's ability to analyse and design Digital Communication systems		CO2	Able to develop Digital Communication Systems using simulation tools/hardware kit
	To understand and analyze the signal flow digital data transmission in the presence of AWGN channel		CO3	Able to work in teams to plan and execute the creation of Advanced Digital Communication systems

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	PSO4
1	CO1	**2**	**2**	**3**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**3**	**-**
2	CO2	**2**	**3**	**3**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**2**	**-**
3	CO3	**3**	**2**	**1**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**2**	**2**	**1**

SYLLABUS

No.	Content	Hours	COs
1.	List of experiments related to Analog and Digital communication systems: ➢ Generation and demodulation of conventional AM signal. ➢ Generation and demodulation of DSB-SC AM signal. ➢ Generation and demodulation of SSB signal. ➢ Generation and demodulation of FM signal. ➢ To calculate the SNR for the AM, DSB-SC, SSB-SC signal with AWGN channel. ➢ To observe the pre-emphasis and de-emphasis of a signal. ➢ Signal generation and reconstruction based on sampling theorem and Nyquist criteria ➢ To generate and demodulate amplitude shift keyed (ASK) signal ➢ To generate and demodulate binary phase shift keyed (BPSK) signal and Quadrature Phase shift keying technique (QPSK) signal ➢ To generate and demodulate frequency shift keyed (FSK) signal ➢ To generate and demodulate Quadrature amplitude modulation (QAM) signal ➢ Transmission of signals using digital modulation techniques: M-ary FSK, M-ary QAM and Error performance of M-ary signalling schemes in AWGN channels ➢ Assume BPSK modulation is used for SNR range of 0-15 dB with a step of 2 dB. Length=1000 bits. Simulate: i) BER of system ii) Plot BER vs SNR performance for simulated results ➢ BER comparison of various digital modulation schemes under Rayleigh channel	**18**	**CO1, CO2, CO3**
	Total Hours	**18**	

Essential Readings

1. Bernard Sklar, "Digital Communications - Fundamentals and Applications," Pearson Education, 2nd Edition, 2001.
2. B.P. Lathi and Ding Zhu, "Modern Digital and Analog Communication Systems", Oxford University Press, 4th Edition, 2010.
3. Simon. Haykin, Michael Moher, "An Introduction to Analog and Digital Communications", John Wiley & Sons, 2nd Edition, 2007.
4. John G. Proakis and Masoud Salehi, "Contemporary Communication Systems using Matlab", Cengage learning, 3rd edition, 2011.

Supplementary Readings

1. John G. Proakis and Masoud Salehi, "Digital Communications", McGraw-Hill, 5th Edition 2008.
2. Leon W. Couch, II, "Digital and Analog Communication Systems," Pearson Education, 6th Edition, 2004.
3. K. Sam Shanmugam, "Digital and Analog Communication Systems", Wiley India Pvt Ltd, 2006.