		<b>National Institute of Technology Meghalaya</b> An Institute of National Importance						<b>CURRICULUM</b>	
Programme		<b>Bachelor of Technology in Electronics and Communication Engineering</b>				Year of Regulation		<b>2018-19</b>	
Department		<b>Electronics and Communication Engineering</b>				Semester		<b>VI</b>	
Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
<b>EC 372</b>	<b>Basics of Communication Systems</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>200</b>
Course Objectives	To familiarize the fundamentals of analog communication.	Course Outcomes	CO1	Ability to understand the fundamentals of analog communication.					
	To familiarize the fundamentals of digital communication.		CO2	Ability to understand the fundamentals of digital communication.					

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	3	1	1	-	2	-	-	-	1	-	-	-	3	1	-	-
2	CO2	3	2	1	-	1	-	-	-	1	-	-	-	3	2	1	-
3	CO3	3	2	1	2	1	-	-	-	1	-	-	-	3	2	2	-

**SYLLABUS**


No.	Content	Hours	COs
I	<b>Introduction</b> Basic Blocks in a Communication System: Transmitter, Channel and Receiver, Baseband and Passband Signals and their Representations, Concept of Modulation and Demodulation, Signal Transmission through a Linear System, Signal Distortion over a Communication Channel. Amplitude modulation (AM) - Double Sideband (DSB), Double Sideband Suppressed Carrier (DSB-SC) Amplitude Modulation, Single sideband (SSB) Amplitude Modulation, Vestigial Sideband (VSB) Amplitude Modulation, Local Carrier Synchronization, Frequency Division Multiplexing, Phase Locked Loop and Some Applications. Nonlinear Modulation, Bandwidth of Angle Modulated Waves, Generating Frequency modulation (FM) Waves, Demodulation of FM Signals, Effects of Nonlinear Distortion and Interferences, Super-Heterodyne Analog AM/FM Receivers, FM Broadcasting System.	<b>12</b>	<b>CO1, CO2</b>
II	<b>Digital communication</b> Sampling Process, Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM), Pulse Position Modulation (PPM), Quantization Techniques, Pulse Code Modulation (PCM), Differential Pulse Code Modulation, Adaptive Differential Pulse Code Modulation, Delta Modulation, Adaptive Delta Modulation. Baseband transmission: intersymbol interference, noise, eye pattern, BER analysis, Optimum filtering, equalization techniques; Clock recovery; Line coding techniques: Binary and multilevel line codes, Basic Digital modulation schemes: Binary modulation schemes- ASK, PSK, FSK, and DPSK.	<b>13</b>	<b>CO2, CO3</b>
Total Hours		<b>25</b>	

**Essential Readings**

- Lathi B. P and Ding Zhi, "Modern Digital and Analog Communication Systems", Oxford University Press, 4<sup>th</sup> edition, 2017
- Proakis J and Salehi M, "Fundamental of Communication Systems", Pearson, 2<sup>nd</sup> edition, 2006.

**Supplementary Readings**

- S. Haykin, "Communication Systems", John Wiley & Sons, 4<sup>th</sup> edition, 2001.
- Leon W. Couch, II, "Digital and Analog Communication Systems," Pearson Education, 6<sup>th</sup> edition, 2004.

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Department		<b>Electronics and Communication Engineering</b>				Semester		<b>VI</b>								
Course Code	Course Name	Credit Structure				Marks Distribution										
		L	T	P	C	INT	MID	END	Total							
<b>EC 374</b>	<b>Designing IoT Platform with Arduino &amp; Pi</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>							
Course Objectives	To understand basic of IoT, Arduino and Pi	Course Outcomes	CO1	Design of circuits using Arduino												
	To develop the Arduino based applications		CO2	Able to analyse the bugs in the Arduino												
	To develop an interface between Arduino and Pi		CO3	Able to interface Arduino & Pi												
			CO4	Design of IoT platform through Arduino & Pi												
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	-	-	-	-	-	-	-	-	-	-	-	3	-	3
2	CO2	-	3	-	-	-	-	-	-	-	-	-	-	2	-	2
3	CO3	2	-	3	-	-	-	-	-	-	-	-	-	2	3	2
4	CO4	-	2	3	-	-	-	-	-	-	-	-	1	2	3	2

**SYLLABUS**

No.	Content	Hours	COs
I	<b>Introduction – Digital and analog signals, Sensors (temperature, accelerometer, IR, Obstacle, ultrasonic), communication modules, LCD display, data processing units</b>	<b>6</b>	<b>CO1</b>