

Course Code	21ECC322L	Course Name	COMMUNICATION LABORATORY	Course Category	C	PROFESSIONAL CORE				L	T	P	C
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Pre-requisite Courses	21MAB203T	Co-requisite Courses	Nil	Progressive Courses	21ECC302T, 21ECC304T
Course Offering Department	ECE	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Program Outcomes (PO)												Program Specific Outcomes		
CLR-1:	afford in depth awareness on various analog modulation and demodulation techniques	1	2	3	4	5	6	7	8	9	10	11	12			
CLR-2:	familiarize effective methods of digital modulation and demodulation techniques															
CLR-3:	examine detailed knowledge on microwave generation, transmission and measurement techniques															
CLR-4:	provide ample evidence on light transmission through optical fiber and their mechanisms															
CLR-5:	analyze the characteristics of specific Microwave and Optical devices and Components															

Course Outcomes (CO):	At the end of this course, learners will be able to:	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
CO-1:	recognize various analog modulation and demodulation techniques	2	-	-	-	-	-	-	-	-	3	-	-	3	-	-
CO-2:	identify systematic methods of digital modulation and demodulation techniques	-	-	2	-	-	-	-	-	-	3	-	-	3	-	-
CO-3:	discover microwave signal generation, transmission and different measurement techniques	2	-	-	3	-	-	-	-	-	-	-	-	3	-	-
CO-4:	realize different characteristics and mechanisms of light transmission through fiber	2	-	-	3	-	-	-	-	-	-	-	-	3	-	-
CO-5:	characterize and analyze Microwave and Optical devices and Components	2	-	3	-	-	-	-	-	-	-	-	-	-	2	-

Unit-1 - Analog Modulation and Demodulation Techniques	12 Hour
Amplitude modulation and demodulation, DSB-SC modulation and demodulation, frequency modulation and demodulation	
Unit-2 - Digital Modulation and Demodulation Techniques	12 Hour
Pulse Code Modulation and demodulation, DM and demodulation, PSK Modulation and demodulation, QPSK Modulation and Demodulation	
Unit-3 - Microwave Communication	12 Hour
Characteristics of Reflex Klystron, power distribution in Directional coupler, E plane, H plane and Magic Tee, Impedance measurement by slotted line method	
Unit-4 - Optical Communication	12 Hour
Characteristics of LED and Laser diode, Characteristics of PIN and APD, Measurement of Numerical Aperture, Propagation and Bending losses.	
Unit-5 - Microwave and Optical Communication	12 Hour
Gain and radiation pattern of Horn antenna, Characteristics of Filters, Strip line and Parallel line Coupler, Analysis of Analog and Digital Optical Link, Simulation of Optical Communication System using Optilux	

Learning Resources	1. Singh. R. P & Sapre S. D, "Communication Systems: Analog & Digital," 3rd edition, McGrawHill Education, Seventh Reprint, 2016. 2. Simon Haykin and Michael Moher, "Communication Systems," 5th edition, John Wiley & Sons, 2013.	3. Samuel Y. Liao, "Microwave Devices and Circuits", 3rd Edition, Pearson Education, 2013 4. Keiser G, "Optical Fiber Communication Systems", 5th Edition, 6th Reprint, McGraw Hill Education, India, 2015. 5. Laboratory Manual
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Learning Assessment									
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)						Final Examination (0% weightage)	
		CLA-1 Average of first cycle experiments (30%)		CLA-2 Average of second cycle experiments (30%)		Practical Examination (40% weightage)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	-	20%	-	20%	-	20%	-	-
Level 2	Understand	-	20%	-	20%	-	20%	-	-
Level 3	Apply	-	30%	-	30%	-	30%	-	-
Level 4	Analyze	-	30%	-	30%	-	30%	-	-
Level 5	Evaluate	-	-	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-	-	-
	Total	100 %		100 %		100%		-	

Course Designers

Experts from Industry

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