

Program Outcomes (Electrical and Communications Engineering)

PO1	An ability to apply the knowledge of mathematics, science and Engineering in all aspects of Electrical Engineering.
PO2	An ability to design and conduct experiments, as well as to analyse and interpret data.
PO3	An ability to design a system, component, or process to meet desired need within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
PO4	An ability to apply the techniques of using appropriate tools to investigate, analyse, design, simulate and/or fabricate/commission complete systems.
PO5	An ability to identify, analyse, formulate, design, simulate and/or fabricate/commission complete systems for engineering problems.
PO6	An ability to communicate effectively and to prepare formal technical plans leading to solutions and detailed reports for electrical systems.
PO7	An ability to work on multidisciplinary teams and comprehend his/her scope of work, deliverables and issues in which able to lead the team towards goal.
PO8	Possess an understanding of professional, safety and ethical responsibility.
PO9	Broad understanding of the impact of engineering solutions in a global, economic, environmental, and societal context.
PO10	Recognition of the need for, and an ability to engage in life-long learning to upgrade to higher learning and research activities.
PO11	Comprehensive knowledge of contemporary issues due to changing technical scenario.
PO12	An ability to manage projects in multidisciplinary environments and apply management techniques, skills, and project management tools necessary for engineering practice.

Chapter	Topic	Week	Topic Outcomes (TO)	LO	PO	Delivery Methods
	Introduction: Review & Overview EM spectrum: Review of E- & M-Fields Theory.	1-2	Application of Vector Calculus in Field Theory & Electromagnetic (Microwave) Radiation and Propagation.	LO4		Lecture/ Tutorial
	Maxwell's Equations. Wave Equations	3-4	Solutions to Plane Waves: Lossless medium Lossy medium Conductors	LO4		Lecture/ Tutorial
	Plane Waves Analysis	5-6	Parameters/Characteristics: Wavelength, Phase Velocity, Tangential loss, Intrinsic impedance, skin-effect, Power flow, Poynting Vector.	LO4		Lecture/ Tutorial
	Wave-guide Theory	7-8	Short-comings of two-conductor lines. Propagation in waveguides - geometrical considerations, boundary conditions. TE and TM modes - excitation and suppression Modes in rectangular and circular wave-guides, wave velocity, wave impedance; attenuation and losses in waveguides.	LO4		Lecture/ Tutorial
	Mid-Semester Break					
	Waveguide Components	9-10	Couplers, joints, matched loads, detectors, Stripline: Types of stripline, characteristic impedance dimensions, wavelength, phase velocity, phase constant, attenuation. Slotline. Finlines. Resonant circuits. Filters. Microwave Amplifiers and Oscillators: GaAS FET. GUNN Diodes. MIC's. Klystrons. TWT.	LO5		Lecture/ Tutorial/Lab
	Optical Communications Components	11-12	Optical fibre concepts, mode of propagation, material properties, multi-mode and single fibres, attenuation and dispersion. Cables, index and mode, design, splices, connectors. Light sources and detectors, laser diodes, light emitting diodes, photodiodes. Modulation and demodulation.	LO4		Lecture/ Tutorial
	Optical Communications Systems	13-14	Advantages and applications. Transmitter and receiver performance. Optical signal processing, noise and overall system and performance.	LO5		Lecture/ Tutorial/Lab
	Exams	15				

Assessment Details			
Type	Group/ Individual	Learning Domain	Mark
Laboratory	Group		10
Assignments	Individual		10
Tests	Individual		20
Final Exam	Individual		60

Assessment schedule:

		Week N ^o .														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Assessment Methods	Lab						x			x		x		x		
	Assignments			x			x			x			x			
	Tests								x						x	

LO-PO mapping:

		Programme Outcomes (POs)											
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
Learning Outcomes LOs	LO 1	x				x							
	LO 2	x	x			x							
	LO 3	x	x		x	x							
	LO 4	x			x	x							
	LO5	x	x	x	x	x							

Prepared By:

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Checked & Approved By:

(Head of the department ECE)

Date:

Date:

Remarks:

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