DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
E&TC Engg	3rd	TUSARKANTI PUHAN

Electric circuits and networks		NO. OF DAYS PER WEEK CLASS ALLOTED : 03	SEMESTER FROM 01/07/2026 TO 05/11/2024
			NO. OF WEEKS:- 15 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Node & Mesh Analysis of Electrical Circuits with simple problem
	2ND	Thevenin theorem
	3RD	Norton theorem and duality, Applications and numericals
2ND WEEK	1ST	superposition theorem
	2ND	milliman and reciprocity theorem
	3RD	explanation and applications, numericals
3RD WEEK	1ST	A.C fundamentals, polar and rectangular coordinates
	2ND	Active and passive elements and some A.C quantities
	3RD	Complex impedance, power, real power
4TH WEEK	1ST	Numericals -1
	2ND	Sinusoidal response of series R-L, R-C circuits
	3RD	Sinusoidal response of series, parallel R-L-C circuits
5TH WEEK	1ST	Sinusoidal response of parallel R-L, R-C circuits
	2nd	Introduction to resonance circuits & Resonance tuned circuit, Series & Parallel resonance
	3rd	Q factor, current, voltage, power factor, Band width impedance,acceptor and rejector
6TH WEEK	1ST	Numericals for both series and parallel resonance-1
	2nd	Numericals for both series and parallel resonance-2
	3rd	power factor problems, tank circuit concepts,comparison of series-parallel resonance
7TH WEEK	1ST	Numericals for 6TH WEEK
	2nd	Idea of Passive & Active Filter, Their relative advantages and disadvantages
	3rd	Idea of Fourier Series & frequency spectrum.Construction, Principle of operation,
8TH WEEK	1ST	High pass, bandpass and band stop filters
	2nd	Design of Low pass filter & High pass filter
	3rd	Numerical problems on the above-1
9TH WEEK	1ST	Composite filter
	2nd	Numericala-1
	3rd	Numericals-2, Definition & properties of Laplace Transform (LT)
10TH WEEK	1ST	LT of unit step, impulse, ramp, exponential, sine, cosine, pulse, impulse
	2nd	Numericals -1
	3rd	Numericals -2,properties of laplace transformation
11TH WEEK	1ST	Explanation of Laplace Transform theorems like Differential, integral
	2nd	Numericals
	3rd	Time displacement, initial value & final value
12TH WEEK	1ST	Inverse Laplace Transformation. Simple problem
	2nd	Numericals
	3rd	Application of Laplace transformation in circuit theory,Both transient and steady state
13TH WEEK	1ST	Numericals - 1
	2nd	Numericals-2
	3rd	Idea on Linear & Non linear networks, Unilateral & Bilateral networks,Examples,
14TH WEEK	1ST	Explanation of Z parameter (Open Circuit Impedance Parameter)
	2nd	Numericals-1
	3rd	Explanation of Y parameter (Short Circuit Admittance Parameter),Numericals -1
15TH WEEK	1ST	Explanation of h -parameter (Hybrid Parameter)
	2nd	Interrelation of above parameters , numericals
	3rd	Inter Connection of Two Port Network ,Simple problem on above parameters.

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DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
E&TC Engg	5th	MRS MANORAMA PADHY,LECT(E&TC)

WAVE PROPAGATION & BROADBAND COMMUNICATION	NO. OF DAYS PER WEEK CLASS ALLOTED : 04	SEMESTER FROM 15/09/2022 TO 22/12/2022
		NO. OF WEEKS:- 15 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2ND	Classification based on Modes of Propagation-Ground wave, Ionosphere ,Sky wave propagation, Space wave propagation
	3RD	Definition of critical frequency, max. useable frequency, skip distance, fading, Duct propagation
2NDWEEK	1ST	Radiation mechanism of an antenna-Maxwell equation.
	2ND	Definition of Antenna gains, Directive gain, Directivity, effective aperture, polarization
	3RD	Definition of input impedance,efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern
3RDWEEK	1ST	Operation of Directional high frequency antenna : Yagi & Rohmbus only with advantage & applications.
	2ND	Operation of UHF &Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna with advantage and applications
	3RD	Basic Concepts of Smart Antennas
4THWEEK	1ST	Fundamentals of transmission line.
	2ND	Equivalent circuit of transmission line & RF equivalent circuit
	3RD	Characteristics impedance, methods of calculations
5THWEEK	1ST	Losses in transmission line
	2nd	Standing wave – SWR, VSWR
	3rd	Reflection coefficient, simple numerical
6THWEEK	1ST	Impedance matching & Stubs – single & double
	2nd	Primary & secondary constant of X-mission line
	3rd	Define-Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth
7THWEEK	1ST	TV Transmitter – Block diagram & function of each block
	2nd	Monochrome TV Receiver -Block diagram & function of each block
	3rd	Colour TV signals (Luminance Signal (I & Q,U & V Signals)
8THWEEK	1ST	Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels
	2nd	Digital Light Processing (DLP),Liquid Crystal Display (LCD)
	3rd	Organic Light-Emitting Diode (OLED) Display, Quantum Light-Emitting Diode (QLED)
9THWEEK	1ST	CATV systems & Types & networks
	2nd	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals
	3rd	Digital TV receiver Video programme processor unit
10THWEEK	1ST	Operation of rectangular wave gives and its advantage
	2nd	Propagation of EM wave through wave guide with TE modes
	3rd	Propagation of EM wave through wave guide with TM modes
11THWEEK	1ST	Operational Cavity resonator
	2nd	Working of Directional coupler, Isolators
	3rd	Working of Circulator
12THWEEK	1ST	Microwave tubes-Principle of operational of two Cavity Klystron
	2nd	Principle of Operations of Travelling Wave Tubes
	3rd	Principle of Operations of Travelling Wave Tubes
13THWEEK	1ST	Principle of Operations of Tunnel Diode
	2nd	Principle of Operations of Gunn diode
	3rd	Broadband communication system-Fundamental of Components
14THWEEK	1ST	Cable broadband data network- architecture, importance
	2nd	Cable broadband data network- future of broadband telecommunication internet based network
	3rd	SONET(Synchronous Optical Network)-Signal frame components topologies
15THWEEK	1ST	ISDN - ISDN Devices interfaces, services
	2nd	ISDN - ISDN Devices Architecture, applications
	3rd	BISDN -interfaces & Terminals

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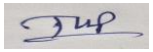
LESSON PLAN FOR SESSION: 2026-27			
DISCIPLINE	**SEMESTER**	**NAME OF THE TEACHING FACULTY**	
ETC ENGG.	**3RD**	**Mr Tusarkanti Puhan, LECT(E&TC), Stage -1**	
SUBJECT:ECN LAB	**NO. OF DAYS PER WEEK CLASS ALLOTED : 04**	**SEMESTER FROM 01/07/2025 TO 05/11/2026**	
		NO. OF WEEKS : 15 NOS.	

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Verification of- Superposition theorem
	2ND	Verification of- Superposition theorem
2NDWEEK	1ST	Verification of- Thevenin, Norton theorem
	2ND	Verification of- Thevenin, Norton theorem
3RDWEEK	1ST	verification of Maximum power transfer theorem
	2ND	verification of Maximum power transfer theorem
4THWEEK	1ST	Use voltmeter, ammeter to determine current through the given branch of an electric network by applying mesh analysis.
	2ND	Use voltmeter, ammeter to determine current through the given branch of an electric network by applying mesh analysis.
5THWEEK	1ST	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.
	2ND	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.
6THWEEK	1ST	Observe an AC wave form on CRO and calculate its average & RMS values, frequency, time period
	2ND	Observe an AC wave form on CRO and calculate its average & RMS values, frequency, time period
7THWEEK	1ST	Analysis of charging & discharging of RC circuit with CRO (calculation of rise time)
	2ND	Analysis of charging & discharging of RC circuit with CRO (calculation of rise time)
8TH WEEK	1ST	Analysis of charging & discharging of RC circuit with CRO (calculation of time constant)
	2ND	Analysis of charging & discharging of RC circuit with CRO (calculation of time constant)
9TH WEEK	1ST	Design of series resonance circuit with a particular cut of frequency and to plot
	2ND	Design of series resonance circuit with a particular cut of frequency and to plot
10TH WEEK	1ST	Design of series resonance circuit with a particular cut of frequency and to plot frequency response
	2ND	Design of series resonance circuit with a particular cut of frequency and to plot frequency response
11TH WEEK	1ST	Design of parallel resonance circuit with a particular cut of frequency and to plot
	2ND	Design of parallel resonance circuit with a particular cut of frequency and to plot

12TH WEEK	1ST	Design of parallel resonance circuit with a particular cut of frequency and to plot
	2ND	Design of parallel resonance circuit with a particular cut of frequency and to plot
13TH WEEK	1ST	Designing of (considering cut-off frequency) Low pass filter and to plot frequency
	2ND	Designing of (considering cut-off frequency) Low pass filter and to plot frequency
14TH WEEK	1ST	Designing of (considering cut-off frequency) High pass filter to plot frequency
	2ND	Designing of (considering cut-off frequency) High pass filter to plot frequency
15TH WEEK	1ST	Simulate the above circuits using circuit simulation software.
	2ND	Simulate the above circuits using circuit simulation software.



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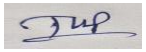
LESSON PLAN FOR SESSION: 2026-27			
DISCIPLINE	**SEMESTER**	**NAME OF THE TEACHING FACULTY**	
ETC ENGG.	**5TH**	**Mr Tusarkanti Puhan, LECT(E&TC), Stage -1**	
SUBJECT: WAVE PROPAGATION & BROAD BAND COMMUNICATION	**NO. OF DAYS PER WEEK CLASS ALLOTED : 04**	**SEMESTER FROM 01/07/2026 TO 05/11/2026**	
		NO. OF WEEKS : 15 NOS.	
WEEKS	**CLASS DAYS**	**THEORY TOPICS**	
1ST WEEK	1ST	Study the Antenna Trainer for different type of Antenna & find its gain	
	2ND	Study the Antenna Trainer for different type of Antenna & find its gain	
2NDWEEK	1ST	Draw the radiation pattern(Yagi, Horn, Rombus,Dipole)	
	2ND	Draw the radiation pattern(Yagi, Horn, Rombus,Dipole)	
3RDWEEK	1ST	find the characteristics of antenna(Yagi, Horn, Rombus,Dipole)	
	2ND	find the characteristics of antenna(Yagi, Horn, Rombus,Dipole)	
4THWEEK	1ST	Draw the waveform of different lobe of different Antennas using antenna trainer	
	2ND	Draw the waveform of different lobe of different Antennas using antenna trainer	
5THWEEK	1ST	Find the Standing Wave ratio (Open & Short Circuit) & different losses in Transmission line	
	2ND	Find the Standing Wave ratio (Open & Short Circuit) & different losses in Transmission line	
6THWEEK	1ST	To study different types of Microwave components	
	2ND	To study different types of Microwave components	
7THWEEK	1ST	Measure VSWR of different types of load (Matched) using Microwave test bench	
	2ND	Measure VSWR of different types of load (Matched) using Microwave test bench	
8TH WEEK	1ST	Measure VSWR of different types of load (Open, Shorted) using Microwave test bench	
	2ND	Measure VSWR of different types of load (Open, Shorted) using Microwave test bench	
9TH WEEK	1ST	Measurement of microwave power using power meter	
	2ND	Measurement of microwave power using power meter	
10TH WEEK	1ST	Set up & installation of Dish TV	
	2ND	Set up & installation of Dish TV	

11TH WEEK	**1ST**	**Study the SMPS section and find out load & line regulation**
	2ND	**Study the SMPS section and find out load & line regulation**
12TH WEEK	**1ST**	**Study the basic common faults in LED TV.**
	2ND	**Study the basic common faults in LED TV.**
13TH WEEK	**1ST**	**Connect the cable TV, HD TV & CCTV using Digital camera & Colour TV monitor & observe the output**
	2ND	**Connect the cable TV, HD TV & CCTV using Digital camera & Colour TV monitor & observe the output**
14TH WEEK	**1ST**	**Study basic principle of Flat screen picture tubes, LCD /LED**
	2ND	**Study basic principle of Flat screen picture tubes, LCD /LED**
15TH WEEK	**1ST**	**Study & visit the Microwave Station/ TV Transmitter/Radio Transmitter or similar establishment & prepare a Project Report**
	2ND	**Study & visit the Microwave Station/ TV Transmitter/Radio Transmitter or similar establishment & prepare a Project Report**



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LESSON PLAN FOR SESSION: 2026-27			
DISCIPLINE	**SEMESTER**	**NAME OF THE TEACHING FACULTY**	
ETC ENGG.	**5TH**	**Mr Tusarkanti Puhan, LECT(E&TC), Stage -1**	
SUBJECT: WAVE PROPAGATION & BROAD BAND COMMUNICATION	**NO. OF DAYS PER WEEK CLASS ALLOTED : 04**	**SEMESTER FROM 01/07/2026 TO 05/11/2026**	
		NO. OF WEEKS : 15 NOS.	

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Study the Antenna Trainer for different type of Antenna & find its gain
	2ND	Study the Antenna Trainer for different type of Antenna & find its gain
2NDWEEK	1ST	Draw the radiation pattern(Yagi, Horn, Rombus,Dipole)
	2ND	Draw the radiation pattern(Yagi, Horn, Rombus,Dipole)
3RDWEEK	1ST	find the characteristics of antenna(Yagi, Horn, Rombus,Dipole)
	2ND	find the characteristics of antenna(Yagi, Horn, Rombus,Dipole)
4THWEEK	1ST	Draw the waveform of different lobe of different Antennas using antenna trainer
	2ND	Draw the waveform of different lobe of different Antennas using antenna trainer
5THWEEK	1ST	Find the Standing Wave ratio (Open & Short Circuit) & different losses in Transmission line
	2ND	Find the Standing Wave ratio (Open & Short Circuit) & different losses in Transmission line
6THWEEK	1ST	To study different types of Microwave components
	2ND	To study different types of Microwave components
7THWEEK	1ST	Measure VSWR of different types of load (Matched) using Microwave test bench
	2ND	Measure VSWR of different types of load (Matched) using Microwave test bench
8TH WEEK	1ST	Measure VSWR of different types of load (Open, Shorted) using Microwave test bench
	2ND	Measure VSWR of different types of load (Open, Shorted) using Microwave test bench
9TH WEEK	1ST	Measurement of microwave power using power meter
	2ND	Measurement of microwave power using power meter
10TH WEEK	1ST	Set up & installation of Dish TV
	2ND	Set up & installation of Dish TV
11TH WEEK	1ST	Study the SMPS section and find out load & line regulation
	2ND	Study the SMPS section and find out load & line regulation
12TH WEEK	1ST	Study the basic common faults in LED TV.
	2ND	Study the basic common faults in LED TV.
13TH WEEK	1ST	Connect the cable TV, HD TV & CCTV using Digital camera & Colour TV monitor & observe the output
	2ND	Connect the cable TV, HD TV & CCTV using Digital camera & Colour TV monitor & observe the output
14TH WEEK	1ST	Study basic principle of Flat screen picture tubes, LCD /LED
	2ND	Study basic principle of Flat screen picture tubes, LCD /LED
15TH WEEK	1ST	Study & visit the Microwave Station/ TV Transmitter/Radio Transmitter or similar establishment & prepare a Project Report
	2ND	Study & visit the Microwave Station/ TV Transmitter/Radio Transmitter or similar establishment & prepare a Project Report

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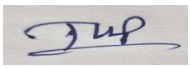
LESSON PLAN FOR SESSION: 2026-27

DISCIPLINE	SEMESTER	NAME OF THE TEACHING F
E&TC Engg	5th	MR TUSARKANTI PUHAN , S-

FIBER OPTIC COMMUNICATIONS	NO. OF DAYS PER WEEK CLASS ALLOTED : 03	SEM 01/07/20 NO. OF

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Introduction to vector nature of light
	2ND	Propagation of light
	3RD	Propagation of light in a cylindrical dielectric rod , Three
2NDWEEK	1ST	Ray model , Refraction, Reflection
	2ND	Wave model , diffraction, interference
	3RD	Explaination of those 2 phenomena through chatgpt and goo
3RDWEEK	1ST	Different types of optical fibers
	2ND	Modal analysis of a step index fiber
	3RD	Signal degradation on optical fiber due to dispersion a
4THWEEK	1ST	Fabrication of fibers and measurement techn
	2ND	OTDR
	3RD	LEDs , LASER
5THWEEK	1ST	Revision of those working principles with visua
	2nd	Pin-detectors-1
	3rd	Pin-detectors-2, Revision through google visua
6THWEEK	1ST	Photo - detectors -1
	2nd	Photo - detectors -2
	3rd	Detector responsivity-1, Detector responsivit
7THWEEK	1ST	Noise
	2nd	Noise characteristics curves
	3rd	Optical receivers -1, overview of above concepts through
8THWEEK	1ST	Optical receivers -2
	2nd	BER introduction
	3rd	BER calculation, Numericals and google online vis
9THWEEK	1ST	Introduction to quantum theory
	2nd	Quantum limit - 1
	3rd	Quantum limit - 2,overview of above concepts through o
10THWEEK	1ST	Power penalties
	2nd	Power penalties - deep dive, parameters
	3rd	Optics introduction,overview of above concepts through o
11THWEEK	1ST	optical switches-1
	2nd	optical switches -2
	3rd	directional couplers introduction
	4th	overview of above concepts through online visu
12THWEEK	1ST	directional coupler -1
	2nd	Coupled mode analysis of directional coupler

EEK	3rd	Coupled mode analysis of directional couplers - 2,overview
13THWEEK	1ST	Electro-optic switches -1
	2nd	Electro-optic switches - 2
	3rd	Nonlinear effects,overview of above concepts through on
14THWEEK	1ST	Nonlinear effects in optical fiber link -1
	2nd	Nonlinear effects in optical fiber link -2
	3rd	Concept of self-phase modulation,Group velocity
15THWEEK	1ST	Optical amplifiers: EDFA
	2nd	Raman amplifier
	3rd	Coherent communication, WDM systems



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MESTER FROM
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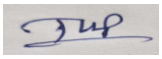
LESSON PLAN FOR SESSION: 2026-27

DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY
E&TC Engg	5th	MR TUSARKANTI PUHAN , S-1,LECT(E&TC)

FIBER OPTIC COMMUNICATIONS	NO. OF DAYS PER WEEK CLASS ALLOTED : 03	SEMESTER FROM 01/07/2026 TO 05/11/2026 NO. OF WEEKS:- 15 NOS.

WEEKS	CLASS DAYS	THEORY TOPICS
1ST WEEK	1ST	Introduction to vector nature of light
	2ND	Propagation of light
	3RD	Propagation of light in a cylindrical dielectric rod , Three dimensional view
2NDWEEK	1ST	Ray model , Refraction, Reflection
	2ND	Wave model , diffraction, interference
	3RD	Explaination of those 2 phenomena through chatgpt and google images, Duality
3RDWEEK	1ST	Different types of optical fibers
	2ND	Modal analysis of a step index fiber
	3RD	Signal degradation on optical fiber due to dispersion and attenuation
4THWEEK	1ST	Fabrication of fibers and measurement techniques
	2ND	OTDR
	3RD	LEDs , LASER
5THWEEK	1ST	Revision of those working principles with visual tools
	2nd	Pin-detectors-1
	3rd	Pin-detectors-2, Revision through google visual tools
6THWEEK	1ST	Photo - detectors -1
	2nd	Photo - detectors -2
	3rd	Detector responsivity-1, Detector responsivity-2
7THWEEK	1ST	Noise
	2nd	Noise characteristics curves
	3rd	Optical receivers -1, overview of above concepts through online visual tools
8THWEEK	1ST	Optical receivers -2
	2nd	BER introduction
	3rd	BER calculation, Numericals and google online visual tools
9THWEEK	1ST	Introduction to quantum theory
	2nd	Quantum limit - 1
	3rd	Quantum limit - 2,overview of above concepts through online visual tools
10THWEEK	1ST	Power penalties
	2nd	Power penalties - deep dive, parameters
	3rd	Optics introduction,overview of above concepts through online visual tools
11THWEEK	1ST	optical switches-1
	2nd	optical switches -2
	3rd	directional couplers introduction
	4th	overview of above concepts through online visual tools
12THWEEK	1ST	directional coupler -1
	2nd	Coupled mode analysis of directional couplers -1
	3rd	Coupled mode analysis of directional couplers - 2,overview of above concepts
13THWEEK	1ST	Electro-optic switches -1
	2nd	Electro-optic switches - 2
	3rd	Nonlinear effects,overview of above concepts through online visual tools
14THWEEK	1ST	Nonlinear effects in optical fiber link -1
	2nd	Nonlinear effects in optical fiber link -2
	3rd	Concept of self-phase modulation,Group velocity dispersion
15THW	1ST	Optical amplifiers: EDFA

13TH WEEK	2nd	Raman amplifier
	3rd	Coherent communication, WDM systems



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