

### Lesson Plan

Branch & Sem		Electrical Engineering (IV th Sem)	W.E.F.		22/02/2025
Course Title & Code		<b>Digital Electronics</b>	Lecture + Tutorial + Practical / week		5
		<i>2025 375 (025)</i>			
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			L+T	P	
1.	Unit-1.0	1.1. Comparison of digital and analog systems	1		February
2.	NUMBER SYSTEM and CODES	1.2. Number Systems: Binary Decimal, Octal and Hexadecimal and their conversions	2		February
3.		1.3 Binary Addition Subtraction Multiplication and Division	2		February
4.		1.4 1's and 2's complement of a number, Basic arithmetic operation using complement method	3		March
5.		1.5 Different types of codes: 8421 BCD, Excess-3, Gray codes, ASCII	2		March
6.		Unit-2 Logic gates and Boolean algebra	2.1 Boolean algebra: Laws of Boolean algebra and DeMorgan's theorem	3	2
7.		2.2 Types of logic gates: AND, OR and NOT. Universal Gates: NAND, NOR, EX-OR and EX-NOR. Truth table, symbol, implementation of basic gate using Universal gate	3	4	March
8.		2.3 Max - term, Min - term, Sum of product (SOP) and Product of Sum(POS) expressions,	2		April
9.		2.4 Simplification of Boolean functions using laws and theorems.	2		April
10.		2.5 Simplification of Boolean functions using K- map method (up to 4 variables)	4		April
11.		Unit-3.0 Combinational Circuits	3.1 Half Adder, Full Adder, Half subtractor, Full subtractor, parallel adder and subtractor, BCD adder'	4	4
12.		3.2 Magnitude comparator (2 and 3 bit). IC 7485 (Pin diagram and truth table)	2		April
13.		3.3 Encoders: 4- Input and 2-Output encoder, Octal to Binary and Binary to BCD Encoder , BCD to binary encoder. Multiplexer: 2 :1, 4 : 1 and 8 :1 multiplexer ( IC 74151)	3	4	May
14.		3.4 Decoders: 3-Line to 8-Line Decoder, 8-4-2-1 BCD to Decimal Decoder. De- multiplexer: 1: 2, 1 : 4 and 1 : 8 demultiplexer.	3	4	May
15.	Unit-4 SEQUENTIAL CIRCUITS	4.1 Flip Flop - basic flip flop and latch, RS F/F, JK F/F, D F/F, T F/F, truth table, characteristic table and excitation table	4	4	May
16.		4.2 Race around condition, MasterSlave JK flip flop	2		May
17.		4.3 UP-DOWN counter (2 to 3 bit), IC7490 (Pin diagram and truth table)	1		June
18.		4.4 Universal Shift Registers, IC 74194 (Pin diagram and truth table)	1	2	June
19.	Unit-5 CONVERTERS and Memories	5.1 Digital to analog converters: weighted resistor,R-2R Ladder network	3	4	July
20.		5.2 Analog to digital converters: Successive approximation, Single and Dual slope converters	4		July
21.		5.3 Different types of semiconductor memories: RAM ROM, EEPROM, UVEPROM, Static RAM, Dynamic RAM, Flash ROM and non-volatile RAM	1	2	July

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### Lesson Plan

Branch		Electronics & Telecommunication		W.E.F.	22/02/2025
Course Title & Code		Analog Electronic Circuit-II (4 <sup>th</sup> SEM)		Lecture + Tutorial + Practical / week	5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			L+T	P	
1.	Unit-1.0 Fundamentals of Operational Amplifier (OP-AMP)	1.1 Working principle and characteristics of basic differential amplifier	3		February
2.		1.2 Block diagram of OPAMP and functions of each block, ideal characteristics of OPAMP, equivalent circuit of practical OP-AMP, virtual ground concept	3	2	March
3.		1.3 OP-AMP IC configuration and various IC packages of OP-AMP, pin configuration of OPAMP ICs and features of data sheet	2	2	March
4.		1.4 Electrical parameters of OP-AMP: voltage gain, input resistance, output resistance, CMRR, slew rate, input offset voltage, input offset currents and bandwidth	2		March
5.	Unit-2.0 Basic OP-AMP Applications	2.1 Inverting and Non-inverting amplifiers using OP-AMP	2	4	March
6.		2.2 OP-AMP as voltage follower, scaling amplifiers, adder, Subtractor, integrator and differentiator, Log amplifier	4	8	March
7.		2.3 Instrumentation amplifier- :circuit diagram and its working	1		April
8.		2.4 Sample/hold circuit working principle	1		April
9.		2.5 Precision rectifiers: Circuit diagram Working ,function	3		April
10.	Unit-3.0 Active Filters and Oscillators using OP-AMP	3.1 Active Filter: Advantages and frequency response characteristics of active filters, parameters of filters: stop band ,pass band, attenuation in stop and pass band, frequency, phase and amplitude, response	3		April
11.		3.2 General idea about types: Low pass, High pass, Band pass, Band stop, notch and orders of active filters: First, second and higher order	3		May
12.		3.3 Wein bridge Oscillators using OP-AMP, circuit diagram, working and frequency of oscillation	1	2	May
13.		3.4 Phase shift oscillator using OP-AMP, circuit diagram, working and frequency of oscillation.	2		May
14.	Unit-4.0 Comparators and Converters using OP-AMP	4.1 OP-AMP based Comparators- types and characteristics	1		May
15.		4.2 OP-AMP based Zero crossing detectors	1	2	May
16.		4.3 OP-AMP based Schmitt trigger- types and characteristics	3	2	May
17.		4.4 OP-AMP based Voltage to frequency converter, basic principle and circuit diagram	2		May
18.		4.5 OP-AMP based Voltage to time converter; basic principle and it's circuit diagram	2		June
19.	Unit 5.0 Common Linear ICs and it's Applications	5.1 IC 555 timer- functional block diagram, pin configuration, Monostable multivibrator and its applications like: frequency divider, PWM and PPM, Astable multivibrator and its applications like: square wave generator and VCO	5	4	July
20.		5.2 PLL- block diagram, basic operation, parameters, transfer characteristics, pin configuration of IC 565	2	2	July
21.		5.3 Three terminal voltage regulator IC: 78XX and 79XX, block diagram, performance parameters, pin configuration and typical connection of IC 7805, pin configuration and functional block diagram of IC 723, basic low and high voltage regulators application of IC 723.	4	2	July

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### Lesson Plan

Branch		Electronics & Telecommunication	W.E.F.		07/01/2025
Course Title & Code		<b>Embedded System and VLSI</b> <b>2028681(028)</b>	Lecture+ Tutorial + practical / week		5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			L+T	P	
1.	Unit 1.0 Overview of Embedded System:	1.1 Embedded System Characteristics	2		January
2.		1.2 Examples: Washing Machine, Chocolate Vending Machine, Room Temperature Controller	3		January
3.		1.3 Operating System(OS): Types of OS, Types of Mobile OS	3		January
4.		1.4 Characteristics of Real Time Operating System	2		January
5.	Unit 2.0 8-bit Microcontrollers Architecture (Atmega 8, AVR)	2.1 Microcontroller Types: PIC, AVR, ARM: features and applications	1		February
6.		2.2 AVR microcontroller: Architecture	1		February
7.		2.3 Internal Architectural ,Block diagram of controller (Atmega 8)	1		February
8.		2.4 Functions of each pins of ATmega 8	2		February
9.		2.5 Configuration of Two 8-bit and One 16-bit Timers and Counters	2		February
10.		2.6 6-channel ADC Working	2		February
11.		2.7 Essential Peripheral circuits: Crystal Circuit, Power supply, Oscillator Circuit	1		February
12.		2.8 Initial programming configurations of Atmega8: port, counter, timer	1		February
13.		2.9 Bootloader Circuit	1		February
14.		2.10 ISP of Atmega 8	1		February
15.	Unit 3.0 Open Source Embedded Development Board (Arduino)	3.1 Functional Block Diagram of Arduino board	2		March
16.		3.2 Functions of each Pin of Arduino board Arduino Development Board diagram (including different blocks only): IDE, I/O Functions, Looping Techniques, Decision Making Techniques	2	2	March
17.		3.3 Describe the features of open source tool used for programming a development board	2		March
18.		3.4 Programming of an Arduino (Arduino ISP)	1	8	March
19.		3.5 Arduino Boot loader	1		March
20.		3.6 Serial Protocol (serial port Interfacing)	1		March
21.		3.7 Initialization of Serial Port using Functions	1		March
22.		3.8 Basic Circuit For Arduino	1		March
23.		3.9 Interfacing and I/O Concept	2		March
24.		3.10 Interfacing LED, Switch, 7seg LED its and Code	2	8	March
25.		3.11 Interfacing DC motor and its Code	2	2	March
26.	Unit-4.0 Introduction to VLSI	4.1. VLSI Technology-History, Advantages, Disadvantages & Applications	2		April
27.		4.2. Steps for Fabrication on Silicon wafer	2		April
28.		4.3. CMOS Fabrication process:	2		April
29.		4.4. STICK diagram & its design Rules	2		April
30.	Unit 5.0 VHDL Programming	5.1 VHDL Design: Entity and Architecture Declaration	2		May
31.		5.2 VHDL modeling –Dataflow, behavioral, structural	2		May
32.		5.3 Logic operations viz. AND, OR, NOR, NAND , NOT, EXOR, EXNOR etc.	3		May
		5.4 Combinational circuit Adder and subtractor	2		May
		5.5 Basic sequential circuits- SR , D , RS, T, JK Flip flops	3		May

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## Lesson Plan

Branch		Electronics & Telecommunication		W.E.F.	27/08/2024
Course Title & Code		Satellite and RADAR Communication (5 <sup>th</sup> SEM) 2028573(028)		Lecture + Tutorial + Practicatl / week	7
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			L + T	P	
1.	Unit 1.0 Introduct ion of satellite communi cation	1.1 Need for satellite communication	1	4	August
2.		1.2 Brief history of satellite communication	1		August
3.		1.3 Block diagram of satellite communication link	1	4	September
4.		1.4 Frequency allocations for satellite services, uplink and downlink frequency, uplink and downlink frequency bands for various services	1		September
5.		1.5 Types of satellite: active and passive, synchronous and non synchronous, Low earth orbit(LEO), Medium earth orbit(MEO) and Geostationary earth orbit(GEO) satellites	1	4	September
6.		1.6 Satellite communication orbits and its advantages and disadvantages	1		September
7.		1.7 Present Indian Satellites Communication scenario	2	4	September
8.	Unit 2.0 Orbital parame ter and launchi ng of satellite	2.1 Kepler's law of satellite motion, first ,second and third law, Orbital parameters: apogee and perigee heights, Orbit perturbations, effects of a non -spherical earth, atmospheric drag	2	4	September
9.		2.2 Basic terminologies related to satellite orbits and satellite: latitude, longitude, look angle, elevation angle; station keeping, propagation delay time , velocity and footprint, satellite time period	3	4	October
10.		2.3 Effect of eclipse on satellite solar power setup	1	4	October
11.		2.4 Mechanics of launching a synchronous satellite in brief	1	4	October
12.	Unit 3.0 Satellite sub- systems	3.1 Space segment subsystem: Altitude and Orbit Control(AOC) Subsystem, Telemetry Tracking Commanding and Monitoring (TTCM) subsystem Power and Antenna subsystems	3	4	October
13.		3.2 Transponders	2		November
14.		3.3 Earth segment subsystem: earth station transmitter and earth station receiver block diagram, function and working	2	4	November
15.		3.4 Link budget calculation: Power flux density, Antenna Gain, Antenna Gain, Transmission Losses, Earth Station Uplink, Satellite Downlink	2		November
16.	Unit 4.0 Multipl e	4.1 Time division multiple access, Frequency division multiple access, Code division multiple access, functions and applications	3		November
17.	Access Techniq ues and	4.2 Satellite services: one way satellite communication link, two way communication satellite link, pre assigned and demand assigned technique	1		November
18.	Satellite Applicat ions	4.3 Satellite Applications: Earth observation, remote sensing, Weather forecast, DBS system, VSAT, MSAT, and GPS.	3	4	November
19.	Unit 5.0 RADAR Systems	5.1 Introduction: Basic principle of RADAR and SONAR, basic types of RADAR, working of RADAR, Applications	1	4	November
20.		5.2 RADAR range equation and examples, factors affecting maximum range	2		December
21.		5.3 Pulse RADAR: block diagram, RADAR antenna, scanning and tracking methods, display methods	2	4	December
22.		5.4 Continuous Wave(CW), Doppler RADAR: Moving target indicator radar, blind speed, frequency modulated CW RADAR	3		December

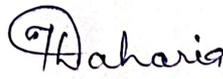
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In-charge Teacher (Himanshu Daharia)

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### Lesson Plan

Branch & Sem		ET&T Engineering (V <sup>th</sup> Sem)		W.E.F.	27/08/2025
Course Title & Code		<b>Communication System- II</b> <b>2028572(028)</b>		Lecture + Tutorial +Lab/week	7
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			Lec.+T	Lab	
1.	<b>UNIT -1</b> <b>Pulse Analog Modulation Techniques</b>	1.1 Sampling Theory: Sampling theorem in time and frequency domain, Aliasing phenomenon, Sampling techniques (Ideal, Natural and Flat top), aperture	2		August
2.		1.2 Pulse Modulation: Pulse Amplitude Modulation(PAM), Pulse Width Modulation(PWM) and Pulse Position Modulation(PPM) :Basic definition, generation and detection procedure, advantages, disadvantages and applications	2	2	August
3.	<b>UNIT -2</b> <b>Pulse Digital Modulation</b>	2.1 Advantage of Digital Communication, Quantization, Uniform and Nonuniform quantization, Pulse Code Modulation(PCM): generation and detection, Noise consideration in PCM, companding	4		Sept.
4.		2.2 Differential Pulse Code Modulation (DPCM), Delta Modulation(DM), Adaptive Delta Modulation (ADM) generation, detection, applications, advantages and disadvantages	3	2	Sept.
6.		2.3 Time division multiplexing(TDM) and Frequency division multiplexing(FDM): system level working, applications	2	2	Sept.
7.					
8.	<b>CLASS TEST-1</b>				Sept.
9.	<b>UNIT-3</b> <b>Digital Band Pass Modulation Techniques</b>	3.1 Principles of Amplitude Shift Keying(ASK), Frequency Shift Keying(FSK) and Phase Shift Keying (PSK) Generation and Detection, bandwidth and power requirement, coherent and noncoherent detection technique	4	2	Oct.
10.		3.2 Concepts of binary modulation techniques, Binary ASK(BASK), Binary FSK(BFSK) and Binary PSK(BPSK)	4	2	Oct.
11.		3.3 Comparison of ASK, FSK and PSK	4		Oct.
12.	<b>UNIT-4</b> <b>Other Digital Modulation Techniques</b>	4.1 Fundamentals of BPSK, DPSK, and QPSK, generation and detection of DPSK, QPSK	4	2	
13.		4.2 Fundamentals of Quadrature Amplitude Modulation (QAM) & Minimum Shift	2		Nov.
14.		4.3 M-ary digital modulation scheme (M-ary PSK, M-ary QAM, M-ary FSK)	4	2	Nov.
15.	<b>UNIT-5</b> <b>Spread Spectrum Communication</b>	5.1 Frequency Hopping Spread Spectrum (FHSS) System, Application of FHSS, fast and low frequency hopping Direct Sequence Spread Spectrum (DSSS),	4	2	Nov.
16.		5.2 Frequency Hopping Spread Spectrum (FHSS) System, Application of FHSS, fast and low frequency hopping Direct Sequence Spread Spectrum (DSSS), Features, generation and detection of DSSS	4	2	Nov.
17.		5.3 Code Division Multiple Access (CDMA) of DSSS, PN sequence generation, properties	2		Dec.
28.		5.4 CDMA in Cellular Phone Networks and GPS Multiple access techniques: FDAM, TDMA and CDMA	4	2	Dec.
19.		<b>CLASS TEST-2</b>			

  
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### Lesson Plan

Branch & Sem		ET&T Engineering (V <sup>th</sup> Sem)	W.E.F.		27/08/2025
Course Title & Code		<b>Consumer Electronics 2028574(028)</b>	Lecture + Tutorial +Lab/week		5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			Lec.+T	Lab	
1.	<b>UNIT-1</b> <b>Audio Systems</b>	1.1 Microphones: characteristics of microphones types of microphones: Carbon Microphone, Crystal Microphone, Moving Coil (Dynamic) Microphone, Capacitor Microphone, Tie Clip Microphone, Wireless/cordless Microphone, Working principle & construction, Bluetooth enabled microphone	4	2	August
2.		1.2 Loudspeaker: Ideal Loudspeaker, Basic Loudspeaker, types of loudspeakers: crystal, electrostatic, permanent magnet; Woofers; tweeters; hi-fi system; multi-speaker system, working principle & construction, Bluetooth enabled speaker	4		August
3.		1.3 PA system: introduction, Basic building blocks: microphone, speaker, and amplifier. PA system characteristics, speaker matching., wi-fi enable PA system.	2		August
4.	<b>UNIT -2</b> <b>Television System</b>	2.1 Evolution of TV System, Definitions: Scanning, picture element, Aspect ratio, Persistence of vision & flicker, Resolution, Video bandwidth, Interlaced scanning, attributes of color, luminance, and chrominance, Camera & TV receiver, Television standard used in India.	4	2	September
5.		2.2 Basic concept on Plasma Display, LCD display, LED display.	4		September
6.		2.3 Basic concept of IPTV, Mobile TV, Smart TV.	6	2	September
8.		2.4 Video interface: Composite, Separate Video, Digital Video Interface, SDI, HDMI.	2	2	September
9.		2.5 Direct to Home System (DTH): Introduction & Block Diagram. Concept of set top box, indoor and outdoor units.	2	2	September
10.		<b>CLASS TEST-1</b>			September
11.	<b>UNIT-3</b> <b>Home Appliances</b>	3.1 Microwave oven: Block diagram and working principle, LCD Timer with Alarm, Single Chip Controller and other important technical specification.	2		October
12.		3.2 Washing Machine: basic parts, Electronic Controller for Washing Machine and other technical specifications.	4		October
		3.3 Air Conditioning & Refrigeration: Block diagram and working principle, functions, indoor and outdoor units and other important technical specifications	4	2	October
13.					
14.	<b>UNIT-4</b> <b>Office Appliances</b>	4.1 Xerography: Xerographic Process, Extension to Dynamic Copier, working, technical specifications.	2	2	November
		4.2 CCTV camera: Introduction, Applications for CCTV, Multi Camera System With Video Recorder(Block Diagram Only)	6		November
		4.3 Biometric Attendance System Block diagram, working, technical			November
15.					
16.	<b>UNIT-5</b> <b>Electronics for Automobiles</b>	5.1 In-Car computers: applications, Electronic ignition, electronic ignition and door lock system, Anti- Lock Braking System, Dashboard functions and circuitry, other digital displays, vehicle proximity Detection System, Car navigation System, charging function and battery operated vehicle.	4	2	Dec.
17.		5.2 Automobile Battery Hybrid Synergy Vehicles Electronic Power Steering and brakingsystem, Parking Assistant System, Immobilizer system, electronic fault indication mechanism/system, RFID based maintenance and repair assistance, fast tage service for toll collection, car communication syse/GPS	2	2	Dec.
18.		<b>CLASS TEST-2</b>			Dec.

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### Lesson Plan

Branch & Sem		ET&T Engineering (VI <sup>th</sup> Sem)		W.E.F.	07/01/2025
Course Title & Code		<b>Computer Network</b>		Lecture + Tutorial+Lab/week	7
		<b>2028672(028)</b>			
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			Lec.+T	Lab	
1.	<b>UNIT-1</b> BASICS OF COMPUTER NETWORKING	1.1. Definition and history of computer networks	1		January
2.		1.2. Types of network-LAN, MAN, WAN a. Wired and Wireless	2		January
3.		1.3 Applications of various types of Computer Networks	1		January
4.		1.4 Standard Organizations and Protocols	2		January
5.		1.5 Computer network services: Connection less and Connection oriented	1		
6.		1.6 Mode of Communication- 1 Simplex,2 Half duplex ,3 Full Duplex	2	2	January
7.		1.7 Line Configuration 1.7.1 Point to Point connection 1.7.2 Point to multi point connection	1		
8.		1.8 Network Topology 1.8.1 Bus Topology 1.8.2 Ring Topology 1.8.3 Star Topology 1.8.4 Mesh Topology 1.8.5 Hybrid Topology	3	2	January
9.	<b>UNIT -2</b> REFERENCE MODELS FOR NETWORK IMPLEMENT ATION	2.1 TCP/IP model and its layers, main functions of each layer, feature and protocol of each layer	4		February
10.		2.2 OSI model, functions and features of each layer: Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer	4	2	February
11.		2.3 Compare OSI and TCP/IP model,	2		February
12.		CLASS TEST-1			February
13.	<b>UNIT-3</b> LINE CODING AND SWITCHING	3.1 Properties of Line Coding	3		March
14.		3.2 Line coding schemes Unipolar :NRZ, RZPolar: NRZ, RZ, Biphasic Bipolar: AMI	2	2	March
15.		3.3 Switching Circuit Switching Message Switching Packet Switching	3		March
16.		3.4 Multiplexing	2		March
17.		3.5 Modem and modem types, specifications, null modem, modem functions and installation	2	2	March
18.	<b>UNIT-4</b> NETWORK PROTOCOL AND APPLICATIONS	4.1 IP Protocol – IP v4, IP v6.	3	2	April
19.		4.2 Addressing Schemes	2		April
20.		4.3 Subnet and Supernet masking	2		April
21.		4.1 DNS,FTP,HTTP	6	4	April
		4.2 Email , SMTP, ICMP 4.3 TCP and UDP 4.4 ARP and RARP			
22.	<b>UNIT-5</b> NETWORK PARAMETERS AND DEVICES	5.1 Network performance parameters-Band Width, Noise, Distortion Attenuation, Bit rate and Baud rate, latency, Throughput, Bandwidth-delay product, jitter	4	2	May
23.		5.1 Network devices: Repeater, Hub, Switch, Bridge, Router, Brouter Access Point, Gateway ,RS 232,R J45 and RJ11, NIC, Bluetooth, Wi-Fi IEEE 802.11	8	2	May
24.		CLASS TEST-2			June

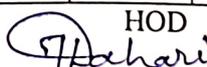
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**Lesson Plan**

Branch & Sem		ET&T Engineering (IV <sup>th</sup> Sem)	W.E.F.		01/04/2025
Course Title & Code		<b>Communication System- I</b>	<b>2028672(028)</b>	Lecture + Tutorial +Lab/week	<b>5</b>
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			Lec.+T	Lab	
1.	<b>UNIT-1</b> <b>Introduction to Communication System</b>	1.1 Basic building blocks of communication system: Transmitter, receiver, channel, antenna, multiplexer, and demultiplexer, encoder, decoder	2		April
2.		1.2 Difference b/w Analog & Digital communication system	2		April
3.		1.3 Modes of communication: Simplex, Half duplex and full duplex	2		April
4.		1.4 Electromagnetic spectrum, different frequency bands and their applications, Concept of bandwidth	2	2	April
5.		1.5 telephone channel, coaxial cable, optical fiber cable, wireless broadcast channel,	2	2	April
6.	<b>UNIT-2</b> <b>Introduction to Signals and Sampling</b>	2.1 Representation of test signals like: pulse, sine, cosine, gate pulses, sawtooth, triangular and other periodic and non- periodic signals	4		May
7.		2.2 Basic Operations on Signals: Time shifting, Time scaling, Amplitude scaling	3		May
8.		2.3 Classification of Signals: Continuous & Discrete signals, Deterministic & Random signals, Periodic & non-Periodic signals, Energy & Power signals, causal & non-causal signals, Even & Odd signals	6	2	
9.		2.4 Use of Fourier series and Fourier transform to analyze the basic signals.	2	2	May
10.		<b>CLASS TEST-1</b>			May
11.	<b>UNIT-3</b> <b>Noise</b>	3.1 Introduction: - sources of noise	1		
12.		3.2 Classification of noise: -shot noise, Partition Noise, Flicker Noise, High frequency noise Thermal Noise, Relation between noise power and bandwidth, White Gaussian noise	4	2	May
13.		3.3 Noise bandwidth, signal to noise ratio, Figure of merit, Noise factor, Noise figure, Noise temperature, Noise factor and equivalent noise temperature of amplifiers connected in cascade.	4	2	May
14.	<b>UNIT-4</b> <b>Analog Modulation</b>	4.1 Concept and necessity of modulation	1	2	June
15.		4.2 Amplitude modulation: mathematical representation of efficiency and percentage of modulation, bandwidth and power requirement in AM, DSB, SSB introduction to VSB	6		June
16.		4.3 Basic idea of low level and high level AM modulation. Angle Modulation: Representation of FM signal and PM signal, Bandwidth and Power requirement in FM & PM, Varactor diode and VCO.	4	2	June
17.	<b>UNIT-5</b> <b>Transmitters and Receivers</b>	5.1 Block diagram and functions of different stages of AM and FM Transmitter	4		June
18.		5.2 Block diagram and function of different blocks of AM and FM receiver	2		June
19.		5.3 Tuned Radio frequency (TRF) receiver	2	2	June
20.		5.4 Super heterodyne Analog AM/FM receivers: Block diagram, principle of operation of super heterodyne receiver -IF amplifier and choice of IF-Mixer & converter	4	2	July
21.		5.5 Receiver characteristics & Testing -sensitivity, selectivity and fidelity	2		July
22.		5.6 Pre-emphasis and de-emphasis circuits	2		July
23.		<b>CLASS TEST-2</b>			July

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 P. Bahari

## Lesson Plan

Branch & Sem		ET&T Engineering (IV <sup>th</sup> Sem)	W.E.F.		01/04/2025
Course Title & Code		<b>Power Electronics</b> <b>2028473(024)</b>	Lecture + Tutorial+Lab/ week		5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned		Month (Approx.)
			Lec.+T	Lab	
1.	<b>UNIT-1</b> <b>Power Electronics Devices</b>	1.1 Silicon Controlled Rectifier (SCR): Construction, principle of operation, characteristic curve, two transistor analogy, Switching characteristics and triggering methods	4	2	April
2.		1.2 Rating and Protection: over voltage, over current, snubber circuit	2		April
3.		1.3 Series and parallel operation of SCRs: String efficiency	2		April
4.		1.4 DIAC, TRIAC –Construction, Operation, characteristic curves and applications	4	2	April
5.	<b>UNIT -2</b> <b>Commutation Techniques And Dc-Dc Converters</b>	2.1 Need for commutation in SCR	2		April
6.		2.2 Principle of Natural and Forced commutations (class A, class B, Class C, class D and class E)	8	2	May
7.		2.3 Working principle of buck, boost and buck boost converter	4		May
8.	<b>CLASS TEST-1</b>				May
9.	<b>UNIT-3</b> <b>Phase Controlled Rectifier</b>	3.1 Single phase half wave- phase controlled rectifier with R and RL load.	4		May
10.		3.2 Single phase full wave- phase controlled rectifier (M-2&B-2 connection) with Rand RL load.	4	2	May
11.		3.3 Effect of free-wheel diode in single phase full converter	2		June
12.		3.4 Three-phase half wave and full wave phase controlled rectifier with Resistive load.	4		June
13..	<b>UNIT-4</b> <b>Inverter and Cycloconverter</b>	4.1 Inverter: Working principle, types-Voltage Source Inverter, Current Source Inverter.	4	2	June
14.		4.2 Single phase series inverter and single phase parallel inverter.	2		June
15.		4.3 Single phase Half bridge and full bridge inverter with Resistive load	2	2	June
16.		4.4 Single phase Cyclo- converter: working principle of Midpoint and bridge Configuration with R load	2	2	July
17.		4.5 Step up and step down single phase Cyclo- converter and its applications	2		July
18.	<b>UNIT-5</b> <b>AC Voltage Controller, UPS and SMPS</b>	5.1 Single phase AC voltage controller: Working principle and its applications	4	2	July
19.		5.2 Significance of UPS, Block diagram of UPS, function of each block, types - ON-line& Off- line UPS.	2	2	July
20.		5.3 SMPS: Block diagram, principle of operation, Advantages and disadvantages and applications of SMPS.	2	2	July
21.	<b>CLASS TEST-2</b>				July

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### Lesson Plan

Branch		Electronics & Telecommunication		W.E.F.	
Course Title & Code		<b>Antenna and Microwave 2028571 (028)</b>		Lecture + Tutorial+Lab/ week	7
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned	Month (Approx.)	
1.	Unit-1.0 Wave Propagation	1.1 Elementary concepts of propagation of Electromagnetic (EM) waves, properties of EM waves ,Classification of EM waves bands , guided and unguided wave propagation	2	August	
2.		1.2 Propagation of ground wave, space wave and sky wave	1	August	
3.		1.3 Ionospheric layers: D, E and F layer, Skip distance, Critical frequency, Plasma frequency, Maximum Usable frequency (MUF), Actual and Virtual height of the ionospheric layer, Multi hops and Duct propagation.	3	August	
4.	Unit 2.0 Antenna Fundamentals	2.1 Basic definition of antenna and working principle, point Source , dipole antenna, Isotropic radiator fire array, working, radiation pattern and applications	1	September	
5.		2.2 Antenna parameters: impedance, radiation resistance, radiation pattern, beam width and beam efficiency, gain, directivity and, radiation intensity, half power BW(HPBW), polarization, antenna losses, antenna efficiency, affective aperture, effective length of antenna	2	September	
6.		2.3 Effects of antenna height on the signal reception	1	September	
7.		2.4 Working Principal, radiation pattern and application of following antennas: Half wave dipole, Loop and Helical antenna, Horn, Yagiuda, folded dipole and Rhombic Antenna, Parabola reflector antenna and Log periodic antenna	5	September	
8.		2.5 Fundamental of Antenna arrays: Broadside and end	1	September	
9.	Unit 3.0 Transmission Lines and Waveguides	3.1 Introduction : transmission line, equivalent circuit of transmission line, voltage and current relationship, propagation constants, attenuation constant, characteristic impedance, Reflection coefficient, Standing wave and VSWR, Short circuit and open circuit line, Half wave, quarter wave, eight wave	9	September	
10.		3.2 Wave guide: Working principle, types of waveguides: Rectangular , Circular Wave Guide, Modes of propagation(basic idea only),function ,characteristics and applications	3	October	
11.		3.3 Microwave components : E plane, H-plane, Magic Tee Directional Coupler, Attenuator, Isolator Circulator, joints, bands, phase shifters(Basic idea only)	3	October	
12.	Unit 4.0 Microwave Amplifiers and Measurement	4.1 Limitations of microwave tube at microwave frequency	1	October	
13.		4.2 Microwave linear beam tube (O Type):	1	October	
14.		4.3 Microwave tubes amplifiers: Klystron – Two cavity and multi cavity, Traveling Wave Tube(TWT) construction, working and applications	3	October	
15.	.....	4.4 Microwave tubes oscillators: Reflex klystron, Magnetron, Backward Wave Oscillator construction, working and applications	3	October	
16.		4.5 Microwave cross field tube(M Type):Magnetron oscillator construction,working and applications	1	October	
17.		4.6 Measurement:VSWR measurement, microwave power, frequency and attenuation measurement	1	October	
18.	Unit 5.0 Microwave Solid State Devices	5.1 Limitation of transistors at microwave frequencies.	1	October	
19.		5.2 Tunnel diode, Gunn diode (working and construction	3	October	
20.		5.3 Transferred electron device: Transit time device ,IMPATT & TRAPATT(basic idea only)	4	November	
21.		5.4 PIN diode and their applications	2	November	

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### Lesson Plan

Branch		Electronics & Telecommunication	W.E.F.	
Course Title & Code		<b>Microcontroller &amp; it's Application</b> <b>2028471(028)</b>	Lecture + Tutorial+Lab/ week	5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned	Month (Approx.)
1.	<b>Unit-1.0 Basics of microprocessor and 8051 Microcontroller</b>	1.1 Microprocessor, microcomputers, and microcontrollers (basic introduction and comparison)	2	February
2.		1.2 Types of buses, address bus, data bus and control bus	1	March
3.		1.3 Harvard and VonNeuman architecture	1	March
4.		1.4 8051 microcontroller: Architecture, Pin configuration, stack, memory organization	3	March
5.		1.5 Comparison between derivatives of 8051 (8951, 8952, 8031, 8751).	2	March
6.	<b>Unit-2.0 8051 Instruction set and programming</b>	2.1 Addressing modes.	2	March
7.		2.2 Instruction set (Data transfer Arithmetic, Branching, Machine control, Stack operation, Boolean)	5	March
8.		2.3 Assembly language programming (ALP)	3	April
9.		2.4 Software development cycle: editor, assembler, crosscompiler, linker, locator, compiler	2	April
10.	<b>Unit 3.08051 Timers, Interrupts , serial and parallel communication</b>	3.1 Timer/Counters: SFRs: TMOD, TCON, Timer / Counter - Logic and modes, Simple programs on timer to generate time delay	3	April
11.		3.2 Interrupts-SFRs: - IE, IP, Simple programs on	3	April
12.		3.3 Serial communication- SFRs: - SCON,SBUF,PCON, Modes of serial communication, Simple programs on serial communication	3	April
13.		3.4 I/O port structure and configuration-P0,P1,P2,P3	1	May
14.	<b>Unit 4.0 8051 Memory and I/O device Interfacing</b>	4.1 Memory interfacing: - Program and data memory.	2	May
15.		4.2 I/O Interfacing: -LED, relays, keyboard, LCD, seven segment display, Stepper motor.	5	May
16.		4.3 Interfacing DAC – 0808 with 8051 and its simple programming.	2	May

17.		4.4 Interfacing ADC - 0808/09 with 8051 and its simple programming	2	May
18.	<b>Unit-5.0 Applications of 8051 Microcontroller</b>	5.1 Square wave generation using port pins of 8051.	1	June
19.		5.2 Water level controller.	2	June
20.		5.3 Temperature controller using ADC (0808/09).	2	June
21.		5.4 Stepper motor control for clock wise, anti- clock wise rotation	2	June
22.		5.5 Traffic light controller	2	June

### Lesson Plan

Branch		Electronics & Telecommunication		W.E.F.	
Course Title & Code		<b>Analog Electronic Circuit - I</b> <b>2028373(028)</b>		Lecture + Tutorial+Lab/ week	5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit	No. of Periods Planned	Month (Approx.)	
1.	<b>Unit-1.0 Transistor at Low Frequency</b>	1.1 h-parameter: Need for h-parameter model of transistor, calculation of input impedance, output impedance, current gain and voltage gain	3	September	
2.		1.2 Comparison of CE, CB, CC h-amplifier circuit based on h-parameter concept, voltage gain, current gain, input impedance, output impedance and load line analysis	2	September	
3.		1.3 Miller's theorem for analysis of common emitter amplifier with collector to base bias	2	September	
4.		1.4 Simplified model of transistor	2	September	
5.	<b>Unit-2.0 Transistor at High Frequency and Multistage Amplifier</b>	2.1 Hybrid $\pi$ model in CE and CC configuration	5	September	
6.		2.2 Relation between hybrid $\pi$ and h-parameter model	2	September	
7.		2.3 Need of multistage amplifier, direct coupled multistage.	1	October	
8.		2.4 RC coupled and transformer coupled multistage amplifier	2	October	
9.		2.5 Selection of amplifier configuration for multistage amplifiers	1	October	
10.	<b>Unit-3.0 FEEDBACK AMPLIFIERS</b>	3.1 Types of feedback, positive and negative feedback in the Amplifiers circuits	2	October	
11.		3.2 Effect of negative feedback on gain, stability, distortion, noise, bandwidth and phase shift.	3	October	
12.		3.3 Effect of negative feedback on input and output impedance	2	October	
13.		3.4 Feedback topologies: Voltage series, Voltage shunt, current series, current shunt	2	October	
14.		3.5 Distortions in amplifiers	1	October	
15.		3.6 Noise in the amplifier	1	October	
16.	<b>Unit-4.0 Oscillators</b>	4.1 Concept of oscillation – oscillation condition in the amplifier circuit, Barkhausen criteria	1	November	
17.		4.2 Mechanism for start of oscillation and Stabilization of amplitude in the oscillator circuit	1	November	
18.		4.3 Sinusoidal oscillator: RC Phase shift oscillators, Wien Bridge oscillator, Resonant circuit oscillators, Colpitt and Hartley oscillator	4	November	
19.		4.4 Crystal controlled oscillator	1	November	
20.	<b>Unit-5.0 Power Amplifier and Tuned Amplifier</b>	5.1 Characteristics of Class A, Class B, Class C and Class AB amplifier.	3	November	
21.		5.2 Difference between voltage and power amplifiers	1	November	
22.		5.3 Circuit operation of Transformer Coupled Class Amplifier, Class B Push Pull amplifier and Class C amplifier	2	November	
23.		5.4 Tuned Amplifier: Tuned circuit, quality factor and bandwidth	1	November	
24.		5.5 Single tuned radio frequency amplifier and double tuned radio frequency amplifier	1	November	

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### Lesson Plan

Branch		Electronics & Telecommunication		W.E.F.	
Course Title & Code		<b>Network Analysis</b> <b>2028371(028)</b>		Lecture + Tutorial+Lab/week	5
Sl. No.	Unit No. & Name	Topic/ Subtopic to be covered under this unit		No. of Periods Planned	Month (Approx.)
1.	<b>Unit-1.0Basic Concepts of Networks</b>	1. Ohms law		1	September
2.		2. Kirchoff's current and voltage law		6	September
3.		3. Sources: Controlled and Independent sources, source transformation: voltage to current and current to voltage		2	September
4.		4. Voltage division and current division techniques		1	September
5.		5. Star-Delta transformation		2	September
6.		6. Nodal Analysis, Super Node, Mesh Analysis, Super		2	September
7.	<b>Unit- 2.0 Network Theorems</b>	2.1 Linearity and Superposition theorem		2	October
8.		2.2 Thevenin's and Norton's theorem		4	October
9.		2.3 Milliman and Dual of Milliman theorem		1	October
10.		2.4 Reciprocal and Maximum Power transfer theorem		2	October
11.	<b>Unit 3:Resonance and Filters Circuits</b>	3.1 Series Resonance: circuit diagram, resonant frequency, resonant impedance, Quality factor, Bandwidth, selectivity		2	October
12.		3.2 Parallel Resonance: circuit diagram, resonant frequency, resonant impedance, Quality factor, Bandwidth, selectivity		2	October
13.		3.3 Basics of filter: cut-off frequency, bandwidth, pass band, stop band, pass band attenuation, stop band attenuation, types of filter: LPF, HPF, BPF, BSF, Notch filter		1	October
14.	<b>Unit-4 Two Port Network</b>	1. Z-Parameter		1	November
15.		2. Y-parameter		1	November
16.		3. Transmission parameter		1	November
17.		4. Hybrid parameter		1	November
18.		5. Condition for Reciprocity and Symmetry for two port networks		1	November
19.		6. Interconnection of Two-port Network: Series connection, Parallel connection, Cascade connection. (For resistive, RL and RC circuits only)		1	November
20.	<b>Unit-5.0 Transient and Steady State Analysis</b>	5.1 Transient and steady state analysis		1	November
21.		5.2 Behavior of L and C element at initial and final		2	November
22.		5.3 Procedures to evaluate initial conditions, Transient and steady state analysis of RL and RC circuit		3	November
23.		5.4 Application of Laplace Transformation Technique in Electric Circuit Analysis		2	November

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