Vedang Institute of Technology, 2nd Shift

Khurda

Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: S Sanjay Kumar Patra

Semester: 6th

Subject:ADVANCE COMMUNICATION ENGINEERING

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Week	Class Day	Topics To Be Covered
1st	1st	State and explain the simple Radar system & its classification
	2nd	Derive Radar range equation, types of radar and their application.
	3rd	Explain the Performance factor of radar.
	4th	Describe the block diagram of pulsed radar system.
2nd	1st	State the function of radar indication and moving target indicator.
	2nd	Define Doppler effect & Describe the block diagram of C.W radar.
	3rd	Explain the radar aids to navigator
	4th	Explain aircraft landing system.
3rd	1st	Explain the concept of Navigation Satellite System.(NAVSAT) & GPS System
	2nd	Simple radar problems
	3rd	Define & Describe Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
	4th	Describe the Concept of Geostationary Satellite , calculate its height, velocity & round trip time delay & their advantage & disadvantage over other system
4th	1st	State Satellite frequency allocation and frequency bands.
	2nd	Describe General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
	3rd	Explain the operation of direct broadcast system (DBS)
	4th	Explain the operation of VSAT system.
5th	1st	Define multiple accessing & name various types.
	2nd	Discuss the Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) & its advantages & dis-advantages
	3rd	Describe Satellite Application- Communication .Satellite, Digital

		Satellite Radio.
5th	4th	Explain GPS Receiver & Transmitter
6th	1st	Define optical communication.
	2nd	Compare the advantage and disadvantage of optical fiber metallic cables
	3rd	Define Electromagnetic Frequency and wave line spectrum
	4th	Need and advantages of optical fibers &principles of light transmission in a fiber using Ray Theory
7th	1st	Describe the optical fiber construction
	2nd	Explain the following terms: Velocity of propagation, Critical angle, Acceptance angle &numerical aperture
	3rd	Discuss the block diagram of an optical fiber communication system
	4th	Define the modes of propagation and index profile of optical fiber
8th	1st	Describe the three types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	2nd	Optical sources – LED- semiconductor
	3rd	Define LASER ,its working Principles Block diagram using laser feedback control circuit
	4th	
9th	1st	Explain Optical detectors – PIN diodes &Block diagram using APD Connectors and splices –Optical cables - Couplers
	2nd	Explain Optical detectors – APD diodes &Block diagram using APD Connectors and splices –Optical cables - Couplers
	3rd	Applications of optical fibers – civil, Industry and Military application
	4th	Explain concept of Wave Length Division Multiplexing (WLDM) principles.
10th	1st	Discuss the operation of Electronic Telephone System. (Telephone Set)
	2nd	Discuss the function of switching system.& Call procedures
	3rd	Discuss the principle of space and time switching.
	4th	Discuss the numbering plan of telephone networks (National Schemes & International Numbering)
11th	1st	Describe the operation of a PBX & Digital EPABX.
	2nd	Define units of Power Measurement.
	3rd	Describe the operation & principal of Internet Protocol Telephone.
	4th	Basic concept ofDataCommunication
12th	1st	Architecture,Protocols and Standards
	2nd	Types ofTransmission& TransmissionModes
	3rd	DataCommunicationcodes

	4th	Basic idea ofError control &ErrorDetection
13th	1st	MODEM&itsbasicblockdiagram&commonfeaturesVoiceBandModem
	2nd	Basic concept of Cell Phone,frequency reuse channel assignment strategichandoffco-channelInterference and systemcapacityofa Cellular Radiosystems.
	3rd	Concept of improving coverage and capacity in cellular system (Cell Splitting,Sectoring)
	4th	WirelessSystems anditsStandards.
14th	1st	Discuss the GSM(GlobalSystemfor Mobile)serviceandfeatures.
	2nd	Architecture of GSM system & GSM mobile station &channel types of GSMsystem.
	3rd	Working of forward and reveres CDMA channel, the frequency and channel specifications
	4th	ArchitectureandfeaturesofGPRS.
15th	1st	Discuss themobileTCP,IPprotocol.
	2nd	WorkingofWireless ApplicationProtocol(WAP).
	3rd	FeaturesofSMS,MMS,1G,2G,3G, 4G& 5GWirelessnetwork.
	4th	SmartPhone and discuss its featuresindicatethrough Blockdiagram.

Vedang Institute of Technology, 2nd Shift

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Department of Electrical & Electronics Engineering

Lesson Plan for Even Semester

Course: Diploma in Engineering

Teachers Name: SUBASH CHANDRA BEHERA

Semester: 6th

Subject :DIGITAL SIGNAL PROCESSING

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Week	Class Day	Topics To Be Covered
1st	1st	Discuss Signals, Systems & Signal processing.
	2nd	Explain basic element of a digital signal processing system.
	3rd	Compare the advantages of digital signal processing over analog signal processing.
	4th	Classify signals
2nd	1st	Multi channel & Multi dimensional signals.
	2nd	Continuous time verses Discrete -times Signal.
	3rd	Continuous valued verses Discrete -valued signals.
	4th	Discuss the concept of frequency in continuous time & discrete time signals.
3rd	1st	Continuous-time sinusoidal signals.
	2nd	Discrete-time sinusoidal signals.
	3rd	Harmonically related complex exponential.
	4th	Discuss Analog to Digital & Digital to Analog conversion & explain the following.
4th	1st	Sampling of Analog signal,
	2nd	The sampling theorem.
	3rd	Quantization of continuous amplitude signals,
	4th	Coding of quantized sample.
5th	1st	Digital to analog conversion.
	2nd	Analysis of digital systems signals vs. discrete time signals systems.
	3rd	State and explain discrete time signals.
	4th	Discuss some elementary discrete time signals.

6th	1st	Classify discrete time signal.
	2nd	Discuss simple manipulation of discrete time signal.
	3rd	Discuss discrete time system.
	4th	Describe input-output of system.
7th	1st	Draw block diagram of discrete- time systems
	2nd	Classify discrete time system.
	3rd	Discuss inter connection of discrete -time system.
	4th	Discuss discrete time time-invariant system.
8th	1st	Discuss different technique for the analysis of linear system.
	2nd	Discuss the resolution of a discrete time signal in to impuse.
	3rd	Discuss the response of LTI system to arbitrary I/Ps using convolution theorem.
	4th	Explain the properties of Convolution & interconnection of LTI system.
9th	1st	Study systems with finite duration and infinite duration impulse response.
	2nd	Discuss discrete time system described by difference equation.
	3rd	Explain recursive & non-recursive discrete time system.
	4th	Determine the impulse response of linear time invariant recursive system.
10th	1st	Discuss Z-transform & its application to LTI system.
	2nd	State & explain direct Z-transform& inverse Z-transform.
	3rd	Discuss various properties of Z-transform.
	4th	Discuss rational Z-transform.
11th	1st	Explain poles & zeros.
	2nd	Determine pole location time domain behavior for casual signals.
	3rd	Describe the system function of a linear time invariant system.
	4th	Determine inverse Z-transform by partial fraction expansion.
12th	1st	Discuss discrete Fourier transform.
	2nd	Determine frequency domain sampling and reconstruction of discrete time signals.
	3rd	State & Explain Discrete Time Fourier transformation(DTFT)
	4th	State & explain Discrete Fourier transformation (DFT).
13th	1st	Compute DFT as a linear transformation.
	2nd	Relate DFT to other transforms.
	3rd	Relate DFT to other transforms.
	4th	Discuss the property of the DFT.
14th	1st	Explain multiplication of two DFT & circular convolution

14th	2nd	Compute DFT algorithm, FFT algorithm.
	3rd	Explain direct computation of DFT.
	4th	Discuss the radix-2 algorithm.
15th	1st	Digital filters.
	2nd	Introduction to DSP architecture, familarsation of different types of processor
	3rd	Revision and Doubt Clearance
	4^{th}	

Signature of Faculty HOD

Vedang Institute of Technology

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Department of Electrical & Electronics Engineering

Lesson Plan

Course: Diploma in Engineering

Teachers Name: Shubhashree sahoo

Semester: 6th

Subject : RENEWABLE ENERGY SOURCES

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Week	Class Day	Topics to Cover
1st	1st	Renewable and Non-renewable Energy Sources
	2nd	Energy and Environment
	3rd	Origin of Renewable Energy Sources
	4th	Potential of Renewable Energy Sources
2nd	1st	Direct-use Technology
	2nd	Solar Radiation Through Atmosphere
	3rd	Terrestrial Solar Radiation
	4th	Measurement of Solar Radiation
3rd	1st	Classification of Solar Radiation Instruments
	2nd	Flat Plate Collectors
	3rd	Optical Characteristics
	4th	Swimming Pool Heating
4th	1st	Solar water Heating Systems
	2nd	Natural Convection water Heating Systems
	3rd	Solar Drying
	4th	Solar Pond
5th	1st	Principle Space conditioning
	2nd	Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling,Shading, Paints, Collings
	3rd	
	4th	Construction of Concentrator
6th	1st	Energy losses
	2nd	Principle Space conditioning
	3rd	Solar Collection System
	4th	Thermal Storage for Solar Power Plants
7th	1st	Capacity Factor and Solar Multiple

	2nd	Energy Conversion
	3rd	Solar Collection System
	4th	Band Theory of Solids, Physical Processes in a Solar Cell ,
8th	1st	Solar Cell Characteristics
	2nd	Equivalent Circuit Diagram of Solar Cells
	3rd	Cell Types - Crystalline Silicon Solar Cell , Solar Cells for Concentrating
	4th	Photovoltaic Systems , Dye –sensitized Solar Cell (DSC)
9th	1st	Solar Module
	2nd	Further System Components -Solar inverters ,Mounting
	3rd	Systems,StorageBatteries ,Other System Components
	4th	Grid-independent Systems -System Configuration
10th	1st	Grid-connected Systems -Small Roof Top Systems ,Medium-scale PV
	2nd	Generator ,Centralized System
	3rd	Wind Flow and Wind Direction
	4th	Wind Measurements
11th	1st	Measurement of Pressure Head
	2nd	Hot wire Anemometer
	3rd	Cup Anemometer (Robinson‘s Anemometer)
	4th	Wind Direction Indicators
12th	1st	Historical Development
	2nd	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy
	3rd	Coefficient and theDrag Coefficient
	4th	Components of a Wind Power Plant -Wind Turbine -Tower -Electric
13th	1st	Generators –Foundation
	2nd	Power Control -Slow Rotors; Poor Control Mechanism -Control of Fast Rotors
	3rd	Present worth, Life cycle costing (LCC), Annual Life cycle
	4th	costing(ALCC), Annualsavings. calculations for Solar thermal system
14th	1st	Solar PV system, Wind system, Biomass system
	2nd	
	3rd	
	4th	
15th	1st	
	2nd	Revision and Doubt Clearance
	3rd	
	4th	

Vedang Institute of Technology, 2nd Shift

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Department of Electrical & Electronics Engineering

Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: Smrutirekha Panda

Semester: 6th

Subject : SWITCH GEAR AND PROTECTIVE DEVICES

Session Duration: 2023-24 Class From: 16/01/2024 to 26/04/2024

Week	Class Day	Topics to Cover
1st	1st	Essential Features of switchgear.
	2nd	Switchgear Equipment.
	3rd	Bus-Bar Arrangement.
	4th	Switchgear Accommodation.
2nd	1st	Short Circuit.
	2nd	Faults in a power system.
	3rd	Symmetrical faults on 3-phase system.
	4th	Limitation of fault current.
3rd	1st	Percentage Reactance.
	2nd	Percentage Reactance and Base KVA.
	3rd	Short – circuit KVA.
	4th	Reactor control of short circuit currents.
4th	1st	Location of reactors.
	2nd	Steps for symmetrical Fault calculations.
	3rd	Solve numerical problems on symmetrical fault.
	4th	Desirable characteristics of fuse element.
5th	1st	Fuse Element materials.
	2nd	Types of Fuses and important terms used for fuses.
	3rd	Low and High voltage fuses & Current carrying capacity of fuse element.
	4th	Difference Between a Fuse and Circuit Breaker.
6th	1st	Definition and principle of Circuit Breaker.
	2nd	Arc phenomenon and principle of Arc Extinction. Methods of Arc Extinction.
	3rd	Definitions of Arc voltage, Re-striking voltage and Recovery voltage.
	4th	Classification of circuit Breakers.
7th	1st	Oil circuit Breaker and its classification. Plain brake oil circuit breaker.
7th	2nd	Arc control oil circuit breaker.

	3rd	Low oil circuit breaker. Maintenance of oil circuit breaker.
	4th	Air-Blast circuit breaker and its classification. Sulphur Hexa-fluoride (SF6) circuit breaker.
8th	1st	Vacuum circuit breakers. Switchgear component.
	2nd	Problems of circuit interruption.
	3rd	Resistance switching. Circuit Breaker Rating.
	4th	Definition of Protective Relay. Fundamental requirement of protective relay.
9th	1st	Basic Relay operation
	2nd	Definition of following important terms
	3rd	Pick-up current.
	4th	Current setting.
10th	1st	Plug setting & Time Setting Multiplier.
	2nd	Classification of functional relays
	3rd	Induction type over current relay (Non-directional)
	4th	Induction type directional power relay & over current relay.
11th	1st	Current differential relay
	2nd	Voltage balance differential relay.
	3rd	Protection of alternator.
	4th	Differential protection of alternators.
12th	1st	Balanced earth fault protection.
	2nd	Protection systems for transformer.
	3rd	Buchholz relay.
	4th	Protection of Bus bar.
13th	1st	Protection of Transmission line.
	2nd	Different pilot wire protection (Merz-price voltage Balance system)
	3rd	Explain protection of feeder by over current and earth fault relay.
	4th	Voltage surge and causes of over voltage.
14th	1st	Internal & External cause of over voltage.
	2nd	Mechanism of lightning discharge.
	3rd	Types of lightning strokes.
	4th	Harmful effect of lightning.
15th	1st	Lightning arresters and Type of lightning Arresters.
	2nd	Rod-gap lightning arrester& Horn-gap arrester.
	3rd	Valve type arrester.
	4th	Surge Absorber