

TENTATIVE LESSON PLAN: R2022021

Course Title: PYTHON PROGRAMMING(R2022021)		
Section :	Date : 28.01.2023	Page No : 01 of 03
Revision No : 00	Prepared By: T. MAHA LAKSHMI	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I Introduction CO1 :Students are able to learn about Python programming language syntax, semantics, and the runtime environment TB:: Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage, 2/e, 2011.			
1	Introduction to Python	From: 30.01.2023 To: 17.02.2023	Lecture interspersed with discussions
2	Program Development Cycle		
3	Input, Processing, and Output		
4	Displaying Output with the Print Function		
5	Comments		
6	Variables		
7	Reading Input from the Keyboard		
8	Performing Calculations, Operators.		
9	Type conversions		
10	Expressions		
11	More about Data Output		
12	Data Types, and Expression		
13	Strings Assignment, and Comment		
14	Numeric Data Types		
15	Character Sets, Using functions		
16	Modules		
17	Decision Structures and Boolean Logic: if Statements		
18	If-else Statements		
19	if-elif-else Statements		
20	Nested Decision Structures		
21	Comparing Strings		
22	Logical Operators		
23	Boolean Variables.		
24	Repetition Structures: Introduction		
25	while loop		

26	for loop		
27	Calculating a Running Total		
28	Input Validation Loops		
29	Nested Loops		

UNIT-II: Control Statement

CO2 :Students are familiarized with general computer programming concepts like conditional execution, loops & functions

TB:: Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage, 2/e, 2011.

30	Definite iteration for Loop Formatting Text for output	From: 20.02.2023 To: 11.03.2023	Lecture interspersed with discussions
31	Selection if and if else Statement Conditional Iteration		
32	The While Loop Strings		
33	Text Files: Accessing Character		
34	Substring in Strings		
35	Data Encryption		
36	Strings and Number Systems		
37	String Methods Text Files.		

UNIT-III: List and Dictionaries

CO3 : Students are able to be familiarized with universal computer programming concepts like data types, containers

TB::Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage, 2/e, 2011

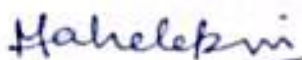
38	Lists	From: 13.03.2023 To: 08.04.2023	Lecture interspersed with discussions
39	Defining Simple Functions		
40	Dictionaries		
41	Design with function: Functions as Abstraction Mechanism		
42	Problem solving with top down design		
43	Design with Recursive Functions		
44	Case study gathering information from a File system		
45	Managing a Program's Namespace		
46	Higher Order Function		
47	Modules: Modules		
48	Standard Modules		
49	Packages		

UNIT-IV File Operations**CO4 : Students are able to be familiarized with general coding techniques and object-oriented programming****TB :: Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage, 2/e, 2011.**

No. of Periods	TOPIC	DATE	Mode of Delivery
50	Reading config files in python	From: 10.04.2023 To: 29.04.2023	Lecture interspersed with discussions
51	Writing log files in python		
52	Understanding read functions		
53	read()		
54	readline() and readlines()		
55	Understanding write functions		
56	write() and writelines()		
57	Manipulating file pointer using seek		
58	Programming using file operations Object Oriented Programming: Concept of class		
59	object and instances		
60	Constructor		
61	class attributes and destructors		
62	Real time use of class in live projects		
63	Inheritance		
64	overlapping and overloading operators		
65	Adding and retrieving dynamic attributes of classes		
66	Programming using OOPs support Design with Classes: Objects and Classes		
67	Data modeling Examples		
68	Case Study An ATM		
69	Structuring Classes with Inheritance and Polymorphism		

UNIT-V Errors and Exceptions**CO5 : Students are able to be familiarized with general coding techniques and object-oriented programming****TB :: Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage, 2/e, 2011.**

No. of Periods	Tutorial	DATE	Mode of Delivery
70	Syntax Errors	From: 01.05.2023 To: 20.05.2023	Lecture interspersed with discussions
71	Exceptions		
72	Handling Exceptions		
73	Raising Exceptions		
74	User-defined Exceptions		
75	Defining Clean-up Actions		
76	Redefined Clean-up Actions		
77	Graphical User Interfaces: The Behavior of Terminal Based Programs		
78	The Behavior of GUI -Based Programs		
79	Coding Simple GUI-Based Programs		
80	Other Useful GUI Resources		
81	Programming: Introduction to Programming Concepts with Scratch		



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TENTATIVE LESSON PLAN

Course/Code: Power Systems-1 / R2022023

Year / Semester : II/II

Section: I

A.Y: 2022-23

S.No	TOPIC	Date	Mode of Delivery
UNIT – I:HYDROELECTRIC POWER STATIONS			
CO1: To study the principle of operation of different components of thermal power station.			
TB: "Generation Distribution and Utilization of Electric Energy by C.L. Wadhawa."			
1	Introduction to power system	From:01-02-23 To: 16-02-2023	Lecture interspersed with discussions
2	Selection of site		
3	Layout of hydro power plant		
4	Principle operation and component		
5	Site selection of thermal power plant		
6	Layout of thermal power plant		
7	Boilers super heaters		
8	Economisers and electrostatic precipitators		
9	Impulse and reaction turbine		
10	Condenser feed water circuit		
11	Cooling towers and chimney		
12	Advantages and disadvantages of tpp		
UNIT – II:NUCLEAR POWER STATION			
CO2:To study the principle of operation of different components of Nuclear power station..			
TB:"Generation Distribution and Utilization of Electric Energy by C.L.Wadhawa."			
13	Site selection of nuclear power plant	From:21-02-23 To: 02-03-2023	Lecture interspersed with discussions
14	Working principle, advantage of NPP		
15	Nuclear Fusion, nuclear fission		
16	Nuclear chain reaction, reactor		
17	Moderator, control rods, reflectors		
18	Coolant and explanation		
19	PWR ,BWR reactors		
20	FBR, and radiation		
21	Radiation hazards and shielding		
22	Nuclear waste disposal		
UNIT – III: CLASSIFICATION OF AIR AND GAS INSULATED SUBSTATIONS.			
CO3: To study the constructional and operation of different components of an Air and Gas insulated substations.			
TB:"Generation Distribution and Utilization of Electric Energy by C.L.Wadhawa."			

23	Classification of substations	From: 3-03-23 To: 1-04-2023	Lecture interspersed with discussions
24	Indoor and outdoor substation		
25	33/11kv substation layout		
26	Busbar arrangements		
27	Single line bus bar arrangement		
28	With sectionalization switch		
29	Double busbar arrangement		
30	Main and transfer busbar		
31	Advantages of GIS		
32	Construction aspects of GIS		
33	Insulation and maintenance of GIS		
34	Types of GIS		
35	Comparison b/w GIS and AIS		

UNIT – IV: UNDERGROUND CABLES

CO4: To study the constructional details of different types of cables

TB: "Generation Distribution and Utilization of Electric Energy by C.L.Wadhawa."

36	Introduction of cables	From: 3-04-23 To: 26-04-23	Lecture interspersed with discussions
37	Types of cables-h -types cables		
38	H S L types SL types cables		
36	Introduction of cables		
38	squirrel cage motors		
39	slip-torque characteristics		
40	efficiency calculation		
41	Problems		
42	starting methods		
43	Brake test on 3-Phase Induction Motor.		
44	Problem on stress		
45	Calculation of power factor		
46	Capacitance of single core cables		
47	Problem on capacitance		
48	Capacitance of three core cable		
49	Problem on three core cable		
50	Introduction of grading of cables		
51	Capacitance grading		
52	Problem on Capacitance grading		
53	Intern sheath grading		
54	Problem Intern sheath grading		
55	Problems on grading		

UNIT – V: ECONOMIC ASPECTS OF POWER GENERATION & TARIFF

CO5: TO study the different types of load curves and tariffs applicable to consumers.

TB: "Generation Distribution and Utilization of Electric Energy by C.L.Wadhawa."

56	Economic aspects of power generation		
57	Load curve load duration curve		
58	Integrated load duration curve		
59	Connected load maximum load		

60	Load factor, Diversity factor problems	From: 2-05-23 To:15-05-2023	Lecture interspersed with discussions
61	Plant capacity factor, plant use factor		
62	Solved problems on economic aspects		
63	Solved problems on load curves		
64	Base loas and peak load plants		
65	Introduction to tariff		
66	Cost characteristics of tariff		
67	Objectives of tariff		
68	Types of tariffs introduction		
69	Requirements of tariff		
70	Simple rate ,flat rate tariff		
71	Block rate tariffs		
72	Two part and 3-part tariff		
73	Power factor tariff methoda		
74	Problems on tariff		

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TENTATIVE LESSON PLAN: R2022024

Course Title: INDUCTION AND SYNCHRONOUS MACHINES			
Section : EEE	Date : 29-01-2023	Page No : 01 of 03	
Revision No : 00	Prepared By: G.SRI HARSHA	Approved By : HOD	
Tools: Black board			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT – I: 3- PHASE INDUCTION MOTORS			
CO1: Understand the principle of operation and performance of 3-phase induction motor			
TB:“ Electrical Machines by P.S. Bhimbra, Khanna Publishers			
1	Introduction to 3- phase induction motors	From: 30-01-2023 To: 14-02-2023	Lecture interspersed with discussions
2	Construction details of squirrel cage induction motors and slip ring induction motors		
3	production of rotating magnetic field		
4	principle of operation		
5	Equivalent circuit		
6	phasor diagram		
7	slip speed-rotor emf		
8	rotor frequency		
9	rotor current and pf at standstill and during running conditions		
10	rotor power input, rotor copper loss and mechanical power developed and their interrelationship		
11	Numerical problems		
UNIT – II: CHARACTERISTICS AND TESTING METHODS OF INDUCTION MOTORS			
CO2: Quantify the performance of induction motor and induction generator in terms of torque and slip			
TB:“ Electrical Machines by P.S. Bhimbra, Khanna Publishers			
12	Torque equation	From: 15-02-2023 To: 02-03-2023	Lecture interspersed with discussions
13	expressions for maximum torque and starting torque		
14	torque slip characteristic		
15	double cage and deep bar rotors		
16	crawling and cogging		
17	speed control of induction motor with V/f control method		
18	no load and blocked rotor tests		
19	circle diagram for predetermination of performance		
20	Induction generator operation		
21	NumericalProblems.		
UNIT – III: STARTING METHODS OF 3-PHASE INDUCTION MOTORS			
CO3: To understand the torque producing mechanism of a single phase induction motor			
TB:“ Electrical Machines by P.S. Bhimbra, Khanna Publishers			
22	Introduction		

23	Methods of starting of three phase Induction motors:	From: 03-03-2023 To: 27-03-2023	Lecture interspersed with discussions
24	DOL		
25	Auto transformer		
26	Star-Delta and rotor resistance methods		
27	SINGLE PHASE INDUCTION MOTORS		
28	Introduction		
29	Constructional features		
30	equivalent circuit		
31	problem of starting		
32	double revolving field theory		
33	Methods of starting		
34	AC series motors		

UNIT – IV: CONSTRUCTION, OPERATION, VOLTAGE REGULATION AND PARALLEL OPERATION OF SYNCHRONOUS GENERATOR

CO4: To understand the principle of emf generation, the effect of armature reaction and predetermination of voltage regulation in synchronous generators

TB:“ Electrical Machines by P.S. Bhimbra, Khanna Publishers

35	Introduction	From: 28-03-2023 To: 03-05-2023	Lecture interspersed with discussions
36	Constructional features of non-salient and salient pole machines		
37	types of armature windings– distribution, pitch and winding factors		
38	E.M.F equation		
39	Improvements of waveform and armature reaction –phasor diagrams		
40	voltage regulation by synchronous impedance method MMF method and Potier triangle method		
41	two reaction analysis of salient pole machines and phasor diagram.		
42	Parallel operation with infinite bus and other alternators		
43	synchronizing power		
44	load sharing		
45	control of real and reactive power		
46	numerical problems.		

UNIT – V: SYNCHRONOUS MOTOR – OPERATION, STARTING AND PERFORMANCE

CO5: To understand the operation, performance and starting methods of synchronous motors.

TB:“ Electrical Machines by P.S. Bhimbra, Khanna Publishers

47	Introduction	From: 04-05-2023 To: 19-05-2023	Lecture interspersed with discussions
48	Synchronous motor principle		
49	theory of operation – phasor diagram		
50	starting torque		
51	variation of current and power factor with excitation		
52	capability curves		

53	synchronous condenser		
54	mathematical analysis for power developed		
55	hunting and its suppression		
56	methods of starting		
57	applications		

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TENTATIVE LESSON PLAN

Course Title: DIGITAL ELECTRONICS		
Section : EEE	Date : 31/01/2023	Page No : 1 to 4
Revision No : 00	Prepared By : A.RAMYA	Approved By : HOD
Tools: Black board, PPTs		

S.NO.	TOPIC	Date	Mode of Delivery
UNIT-I Review Of Number Systems & Codes, Boolean Theorems And Logic Operations CO1: Classify different number systems apply to generate various codes and minimization of Boolean functions using Boolean algebra. TB1: Digital Design, 5/e, Morris Mano, Michael D Ciletti, PEA.			
1	Representation of numbers of different radix, conversion from one radix to another radix,	From: 30/01/2023 To: 24/02/2023	Lecture interspersed with discussions
2	r-1's compliments and r's compliments of signed numbers.		
3	Gray code ,4 bit codes		
4	BCD, Excess-3, 2421, 84-2-1 code etc.		
5	Even parity, odd parity, Hamming code.		
6	Error detection & correction codes: parity checking		
7	problems		
8	Problems on parity check codes and Hamming codes		
9	Problems on Error detection		
10	Introduction to Boolean Theorems		
11	BOOLEAN THEOREMS AND LOGIC OPERATIONS: Boolean theorems, principle of complementation & duality		
12	De-Morgan's theorems. Logic operations		
13	Basic logic operations -NOT, OR, AND, Universal Logic operations, EX-OR, EX-NOR operations		
14	Standard SOP and POS Forms, NAND-NAND and NOR-NOR realizations,		
15	Realization of three level logic circuits.		
16	Study the pin diagram and obtain truth table for the following relevant ICs 7400, 7402, 7404, 7408, 7432, 7486.		

Tutorial class			
UNIT-II Minimization Techniques, Combinational Logic Circuits Design CO2: Understand minimization of switching function using K-Maps to design Combinational logic circuits. TBI: Digital Design, 5/e, Morris Mano, Michael D Ciletti, PEA.			
17	MINIMIZATION TECHNIQUES: Minimization and realization of switching functions using Boolean theorems	From: 27/02/2023 To: 13/03/2023	Lecture interspersed with discussions
18	K-Map (up to 6 variables)		
19	Problems on 1,2 variable k-map		
20	Problems on 3,4 variable k-map		
21	Problems on 5,6 variable k-map, Don't care conditions		
22	Tabular method (Quine-mc cluskey method) with only four variables and single function.		
23	COMBINATIONAL LOGIC CIRCUITS DESIGN: Design of Half adder,		
24	full adder, half Subtractor, full Subtractor, applications of full adders		
25	4-bit adder-Subtractor circuit, BCD adder circuit, Excess 3 adder circuit		
26	carry look-a-head adder circuit		
27	Design code converts using Karnaugh method and draws the complete circuit diagrams.		
Tutorial class			
UNIT-III Combinational Logic Circuits Design Using MSI & LSI, Introduction of PLDs CO3: Apply knowledge of logic circuits to design combinational circuits and PLDs TBI: Digital Design, 5/e, Morris Mano, Michael D Ciletti, PEA.			
28	COMBINATIONAL LOGIC CIRCUITS DESIGN USING MSI & LSI : Design of encoder, decoder. multiplexer and de-multiplexers	From 14/03/2023 To 10/04/2023	Lecture interspersed with discussions
29	Implementation of higher order circuits using lower order circuits.		
30	Realization of Boolean functions using decoders.		
31	Realization of Boolean functions using multiplexers.		
32	Design of Priority encoder,		
33	4-bit digital comparator and seven segment decoder		
34	Study the relevant ICs pin diagrams and their functions 7442, 7447, 7485, 74154.		

35	INTRODUCTION OF PLD's: PLDs: PAL, realization of Boolean functions, Programming table		
36	PLA - Basics structures realization of Boolean functions, Programming table		
37	PROM - Basics structures realization of Boolean functions, Programming table		
	Tutorial class		

UNIT-IV Sequential Circuits I

CO4: Understand the knowledge of flip-flops in designing of Registers and counters.
TB1: Digital Design, 5/e, Morris Mano, Michael D Ciletti, PEA.

38	SEQUENTIAL CIRCUITS I: Classification of sequential circuits (synchronous and asynchronous)	From 11/04/2023 To 2/05/2023	Lecture Interspersed with discussions
39	Operation of NAND NOR Latches and flip-flops; truth tables excitation tables		
40	RS flip-flop, JK flip-flop		
41	T flip-flop, D flip-flop with reset and clear terminals		
42	Conversion from one flip-flop to another flip- flop		
43	Design of 5 bit ripple counters		
44	Design of synchronous counters		
45	Johnson counter, ring counter		
46	Design of registers - Buffer register, control buffer register		
47	Shift register, bi-directional shift register		
48	Universal shift register		
49	Study the following relevant ICs and their relevant functions 7474, 7475, 7476, 7490, 7493, 74121.		
50	Tutorial class		

UNIT-V Sequential Circuits II

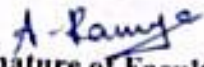
CO5: Apply knowledge of state machines diagrams and tables to design sequential circuits.
TB2: Switching and finite automata theory Zvi.KOHAVI, Niraj.K.Jha 3rd Edition, Cambridge
University Press, 2009

51	SEQUENTIAL CIRCUITS II : Finite state machine Realization of sequence generator,	From 04/05/2023 To	Lecture interspersed with discussions
52	State diagrams, state tables		

53	Reduction of state tables	18/05/2023	
54	Analysis of clocked sequential circuits Mealy to Moore conversion and vice-versa.		
49	Design of Clocked Sequential Circuit to detect the given sequence (with overlapping or without overlapping).		
50	Tutorial class		

TB1: Digital Design, 5/e, Morris Mano, Michael D Ciletti, PEA

TB2: Switching and finite automata theory Zvi.KOHAVI,Niraj.K.Jha 3rd Edition,Cambridge University Press,2009


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TENTATIVE LESSON PLAN: R2022025
MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTANCY

Course Title: MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTANCY

Section: EEE

Date: 30/01/2023

Page No: 01 of 03

Revision No: 00

Prepared By: SRINIVAS.V

Approved By: HOD

Tools: Black board, PPTs,

SL. NO.	TOPIC	Date	Mode of Delivery
UNIT -I INTRODUCTION TO MANAGERIAL ECONOMICS			
CO1: The Learning objectives of this paper are to understand the concept and nature of Managerial Economics and its relationship with other disciplines and also to understand the Concept of Demand and Demand forecasting			
TB: A.R. Arya Sri, "Managerial Economics & Financial Analysis", 2005, TMH.			
1.	Introduction to Managerial Economics, Definitions	From 30-01-2023 to 21-02-2023	Lecture interspersed with discussions
2.	Scope of Managerial Economics and its related to Other subjects		
3.	Introduction to Demand – Meaning & Definition, Features of Demand		
4.	Determinants of Demand		
5.	Law of Demand & Its exceptions, Demand Function		
6.	Elasticity of Demand, Types of Elasticity of Demand		
7.	Types of price Elasticity of Demand		
8.	Measurement of Price Elasticity of Demand		
9.	Introduction: Demand Forecasting		
10.	Importance of Demand Forecasting		
11.	Demand Forecasting Methods		
12.	Concept of Supply, Law of supply		
UNIT -II PRODUCTION & COST ANALYSIS			
CO2: To familiarize about the Production function, Input Output relationship, Cost-Output relationship and Cost-Volume-Profit Analysis			
TB: A.R. Arya Sri, "Managerial Economics & Financial Analysis", 2005, TMH.			
13.	Introduction to Production: Meaning & Definition, Production Function	From 22-02-2023 to 10-03-2023	Lecture interspersed with discussions
14.	Factors of production, production function with one variable factor		
15.	Law of Variable Proportions		
16.	Factors of production, production function with two variable factors		
17.	Concept of Iso-costs, Isoquants		
18.	MRTS, Least Cost Combination		
19.	Cobb-Douglas Production Function		
20.	Economies of Scale & diseconomies of scale		
21.	Returns to Scale & returns to factors		
22.	Concept of cost & Various Cost Concepts		
23.	Introduction to Break Even Analysis		
24.	Determination of Break Even Point with Graph		
25.	Calculation of Break-Even Point (BEP) algebraic method		

UNIT - III INTRODUCTION TO MARKETS, THEORIES OF THE FIRM AND PRICING POLICIES**CO3:** To understand the nature of markets, Methods of Pricing in the different market structures and to know the different forms of Business organization and the concept of Business Cycles**TB:** A.R. Arya Sri, "Managerial Economics & Financial Analysis", 2005, TMH.

26.	Introduction to Markets: Meaning & Definition, Features	From 13/03/2023 To 10/04/2023	Lecture interspersed with discussions
27.	Types of markets, market structure		
28.	Price Determination under perfect competition		
29.	Equilibrium-point of firm and industry		
30.	Price Determination under Monopoly		
31.	Equilibrium-point of firm and industry in monopoly		
32.	Price Determination under Monopolistic Competition		
33.	Price Determination under Oligopoly		
34.	Managerial Theories of the Firm		
35.	Marries and Williamson theory of firm		
36.	Pricing, pricing objectives.		
37.	Various Methods of Pricing		
38.	Introduction to Business: Definition, Features		
39.	Sole Proprietorship: Features, Merits, Demerits		
40.	Partnership: Features, Merits, Demerits, kinds of partners		
41.	Joint Stock Company: Features, Merits, Demerits		
42.	Public limited and private limited companies, features		
43.	Public Enterprises: Features, Merits, Demerits		
44.	Phases of Business Cycles		

UNIT - IV INTRODUCTION TO ACCOUNTING & FINANCING ANALYSIS:**CO4:** To learn different Accounting Systems, preparation of Financial Statement and uses of different tools for performance evaluation**TB:** A.R. Arya Sri, "Managerial Economics & Financial Analysis", 2005, TMH.

SL. NO.	TOPIC	DATE	Mode of Delivery
45.	Introduction to Accounting: Meaning & Definition, Classification of Accounts	From 11/04/2023 To 30/04/2023	Lecture interspersed with discussions
46.	Accounting Process		
47.	Principles of accounting (GAAP)		
48.	Accounting cycle		
49.	Preparation of Journal: Problems		
50.	Preparation of Ledger: Problems		
51.	Preparation of Trail Balance: Problems		
52.	Final Accounts (Trading, profit & loss A/C, Balance Sheet)		
53.	Final Accounts with Adjustments		
54.	Treatment of adjustments in preparation of final accounts.		
55.	Introduction to Financial Statement Analysis: Importance, Objectives.		
56.	Classification of Ratios: Liquidity Ratios		
57.	Classification of Ratios: Activity Ratios		

58.	Classification of Ratios: Solvency Ratios		
59.	Classification of Ratios: Profitability Ratios		
60.	Preparation of Changes in Working Capital		
61.	Preparation of Funds Flow Statement		
62.	Preparation of Cash Flow Statement		

UNIT – V CAPITAL, CAPITAL BUDGETING

CO5: To understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

TB: A.R. Arya Sri, "Managerial Economics & Financial Analysis", 2005, TMH

SL. NO.	TOPIC	DATE	Mode of Delivery
63.	Introduction to Capital Budgeting: Meaning, Definition, and Need.	From 01/05/2023 To 13/05/2023	Lecture interspersed with discussions
64.	Methods of Capital Budgeting: Pay Back Period (PBP).		
65.	Calculation of Accounting Rate of Return (ARR)		
66.	Calculation of Net Present Value (NPV)		
67.	Calculation of Internal Rate of Return (IRR)		
68.	Calculation of Profitability Index		
69.	Merits and Demerits of Capital Budgeting Techniques.		

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TENTATIVE LESSON PLAN

Course/Code: Power System Analysis / R2032023

Year / Semester : III/II

Section: I

A.Y: 2022-23

No. of periods	Topics	Date	Mode of Delivery
UNIT-I Circuit Topology & Per Unit Representation CO1 : To development the impedance diagram (p.u) and formation of Ybus TB: Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.			
1	Graph theory definition	From: 14-02-2022 To: 15.03.2022	Lecture interspersed with discussions
2	Formation of element node incidence		
3	Formation of bus incidence matrices		
4	Formation of bus incidence matrices		
5	Primitive network representation		
6	Primitive network representation		
7	Formation of Ybus matrix by singular transformation		
8	Formation of Ybus matrix by singular transformation		
9	problems		
10	problems		
11	Formation of Ybus direct inspection methods		
12	Formation of Ybus direct inspection methods		
13	Per Unit Quantities		
14	Tutorial		
15	problems		
16	Single line diagram		
17	Single line diagram		
18	problems		
19	Impedance diagram of a power system.		
20	Tutorial		
UNIT-II Power Flow Studies CO2 : To study the different load flow methods. TB: Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.			
13	Necessity of power flow studies		
14	Derivation of static power flow equations		
12	Types of buses		

13	Power flow solution using Gauss-Seidel Method	16-03-2022 TO 26-03-2022	Lecture interspersed with discussions
14	Power flow solution using Gauss-Seidel Method		
15	Tutorial		
16	Newton Raphson Method (Rectangular coordinates form)		
17	Newton Raphson Method (polar coordinates form)		
18	Decoupled and Fast Decoupled methods		
19	Algorithmic approach		
20	Problems on 3-bus system only.		
21	Tutorial		

UNIT-III Z-Bus Algorithm & Symmetrical Fault Analysis & Symmetrical Fault Analysis
CO3 : To study the concept of the Zbusbuilding algorithm & To study short circuit calculation for symmetrical faults

TB: Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.

22	Z-Bus Algorithm introduction	28-03-2022 TO 9-04-2022	Lecture interspersed with discussions
23	Formation of Zbus		
24	Algorithm for the Modification of Zbus Matrix ((without mutual impedance).		
25	Algorithm for the Modification of Zbus Matrix ((without mutual impedance).		
26	Algorithm for the Modification of Zbus Matrix ((without mutual impedance).		
27	Tutorial		
28	Symmetrical Fault Analysis introduction		
29	Reactances of Synchronous Machine		
30	Three Phase Short Circuit Currents in a alternator		
31	Three Phase Short Circuit Currents in a transformer		
32	Short circuit MVA calculations for Power Systems.		
33	Tutorial		

UNIT-IV Symmetrical Components & Fault analysis

CO4 : Explain the effect of unsymmetrical faults and their effects.

TB: Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.

34	Definition of symmetrical components	20-04-2022 TO 07-05-2022	Lecture interspersed with discussions
35	symmetrical components of unbalanced three phase systems		
36	Power in symmetrical components		
37	Sequence impedances of Synchronous generator		
38	Sequence impedances of Transmission line		
39	Sequence impedances of transformers		
40	Sequence networks		
41	Tutorial		
42	faults LG & LL on unloaded alternator		
43	faults LLG and LLL on unloaded alternator		
44	unsymmetrical faults on power system		
45	unsymmetrical faults on power system		

46	Tutorial		
47	Numerical problems		
48	Numerical problems		
UNIT-V Power System Stability Analysis			
COS : Explain the rotor angle stability of power systems.			
TB: Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.			
49	Power System Stability Analysis	09-05-2022 TO 28-05-2022	Lecture interspersed with discussions
50	Elementary concepts of Steady state – Dynamic Stabilities		
51	Elementary concepts of Transient Stability		
52	Description of Steady State Stability Power Limit		
53	Transfer Reactance & Synchronizing Power Coefficient		
54	Tutorial		
55	Power Angle Curve and Determination of Steady State Stability		
56	Derivation of Swing Equation		
57	Determination of Transient Stability by Equal Area Criterion		
58	Applications of Equal Area Criterion		
59	Methods to improve steady state and transient stability		
60	Tutorial		


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TENTATIVE LESSON PLAN: R203202D

Course Title: SWITCH GEAR&PROTECTION			
Section : EEE	Date :2-1-2023	Page No : 01 of 02	
Revision No : 00	Prepared By: M.NAGA JAYASRI	Approved By : HOD	
Tools: Black board			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT – I: Circuit Breakers			
CO1: To provide basic principles and operation of different types of circuit breakers			
TB:Power System protection and switchgear by BadriRam&D.N Viswakarma			
1	Application oriented evolution of Switchgear - Miniature Circuit Breaker(MCB)	From:9-1-2023 To:7-2-2023	Lecture interspersed with discussions
2	Elementary principles of arc interruption- Restriking Voltage and Recovery voltages		
3	Restriking phenomenon - RRRV- Average and Max. RRRV		
4	Current chopping and Resistance switching		
5	Concept of oil circuit breakers		
6	Description and operation of Air Blast		
7	Vacuum circuit breakers		
8	SF6 circuit breakers		
9	Circuit Breaker ratings and specifications		
10	Concept of Auto reclosing		
11	Numerical examples		
UNIT – II:Electromagnetic Protection			
CO2: To know the classification,operation and application of different types of electromagnetic protective relays			
TB:Power System protection and switchgear by BadriRam&D.N Viswakarma			
12	Relay connection – Balanced beam type attracted armature relay	From:13-2-2023 To:27-2-2023	Lecture interspersed with discussions
13	induction disc and induction cup relays		
14	Torque equation		
15	Relays classification-Instantaneous relays		
16	Over current and under voltage relays		
17	Directional relays		
18	Differential relays		
19	percentage differential relays		
20	Universal torque equation		
21	Distance relays: Impedance relay		
22	Reactance- Mho and offset mho relays		
23	Characteristics of distance relays and comparison		

UNIT – III: Generator & Transformer Protection			
CO3: To explain protective schemes of Generator & Transformer			
TB:Power systems by V.K.MEHTA			
23	Protection of generators against stator faults	From:2-3-2023 To: 27-3-2023	Lecture interspersed with discussions
24	Rotor faults and abnormal conditions		
25	restricted earth fault protection		
26	inter turn fault protection		
27	Numerical examples		
28	Percentage differential protection		
29	Buchholz relay protection		
30	Numerical examples		
UNIT – IV:Feeder and Bus bar Protection & Static Relays			
CO4: To gain the knowledge of various schemes of feeders and busbar protection			
TB:Power systems by V.K.MEHTA			
31	Over current Protection schemes- PSM	From: 28-3-2023 To: 15-4-2023	Lecture interspersed with discussions
32	Over current Protection schemes- TSM		
33	Carrier current and three zone distance relay using impedance relays.		
34	Protection of bus bars by using Differential protection		
35	Static relays: Introduction		
36	Classification of Static Relays		
37	Basic Components of Static Relays.		
UNIT – V:Protection against over voltage and grounding			
CO5:To understand the different types of over voltages in power systems and principles of different neutral grounding methods			
TB:Power systems by V.K.MEHTA			
38	Generation of over voltages in power system	From: 17-4-2023 To: 2-5-2023	Lecture interspersed with discussions
39	Protection against lightning over voltages		
40	Valve type and zinc oxide lightning arresters		
41	Grounded and ungrounded neutral systems		
42	Effects of ungrounded neutral on system performance		
43	Methods of neutral grounding: Solid		
44	Resistance&Reactance grounding		
45	Arcing grounds		

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**TENTATIVE LESSON PLAN: R2032041
MICROPROCESSOR AND MICROCONTROLLERS**

Course Title: Microprocessor and Microcontrollers			
Section: EEE	Date: 09.01.23	Page No:1 to 3	
Revision No: 00	Prepared By: D. S. PHANI KISHORE	Approved By: HOD	
Tools: Black board, PPTs			
S.NO.	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO 8086 ARCHITECTURE			
CO1: Discuss about the Intel 8086 microprocessor, its architecture, and its pin diagram.			
TB1: A. K Ray, K.M.Bhurchandhi, "Advanced Microprocessor and Peripherals", Tata McGraw Hill Publications, 2000.			
1	Introduction to course/overview of the syllabus	From 09.01.2023 To 15.02.2023	Lecture interspersed with discussions
2	UNIT - I Introduction to Microprocessor Architecture		
3	evolution of Microprocessor		
4	Discussion on microprocessor and microcontroller		
5	Solved Max. 1's digital circuit (revision of CO topics)		
6	Differences b/w Von Neuman and Harvard Architectures		
7	Introduction to 80286 - 80386 - 80486 and Pentium (brief description about architectural advancements only)		
8	Introduction to 80286 - 80386 - 80486 and Pentium (brief description about architectural advancements only)		
9	Architecture of 8086: microprocessor-initiated operations MEMR, MEMW, IOR, IOW signals		
10	Assembling of a sample assembly language program(ALP)		
11	Register Organization of 8086: General Purpose Registers illustrated using examples		
12	Register Organization of 8086: General Purpose Registers illustrated using examples		
13	Register Organization: Special purpose registers illustrated using examples		
14	Architecture of EFLAGS register		
15	Calculation of physical address from logical address		
16	Fetching, Decoding and Execution of instruction		
17	Stack operations during call of a procedure		
18	Interrupts and interrupt response		
19	Serving an interrupt using an illustrative example		
UNIT-II 8086 PROGRAMMING			
CO2: Write assembly language programs for the 8086, execute and debug them.			
TB1: A. K Ray, K.M.Bhurchandhi, "Advanced Microprocessor and Peripherals", Tata McGraw Hill Publications, 2000.			

20	Addressing modes	From 16.02.2023 To 23.03.2023	Lecture interspersed with discussions
21	Instruction sets of 8086: Data Transfer Instructions		
22	LAHF, SAHF and Arithmetic Instructions		
23	Arithmetic Instructions		
24	Writing a 8051 ALP with examples		
25	Pin Configuration of 8086		
26	Revise Architecture of 8086 Block Diagram		
27	Pin Configuration of 8086		
28	Microprocessors I/O interfacing 8255 PPI: Architecture of 8255, Modes of operation		
29	Interfacing I/O devices to 8086 using 8255: Interfacing Stepper Motor		
30	BHE signal, Memory Organization of 8086 Even and Odd banks		
31	Interfacing A to D converters, Interfacing D to A converters		
32	Minimum and Maximum Mode Operations		
33	Minimum and Maximum mode operations of 8086		
34	8086 Control signal interfacing		
35	Read and write cycle timing diagrams		
36	Assembler directives - General bus operation of 8086		

UNIT-III 8086 INTERFACING

CO3: Interface 8086 with different peripherals and control them through program.

TB1: A. K Ray, K.M.Bhurchandhi, "Advanced Microprocessor and Peripherals", Tata McGraw Hill Publications, 2000.

37	Microprocessors I/O interfacing: 8255 PPI, Architecture of 8255, Modes of operation	From 24.03.2023 To 31.03.2023	Lecture interspersed with discussions
	Interfacing I/O devices to 8086 using 8255: Interfacing Stepper Motor		
	Interfacing A to D converters, Interfacing D to A converters		
39	Static memory interfacing with 8086		
40	Architecture and interfacing of 8251 USART		

UNIT-IV Intel 8051 MICROCONTROLLER

CO4: Describe the Intel 8051 microcontroller architecture, its pin diagram and program its onboard peripherals.

TB2: The 8051 Microcontrollers and Embedded systems Using Assembly and C, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; Pearson 2-Edition, 2011.

41	8051 Microcontroller Overview of 8051 Microcontroller: Architecture block diagram	From 1.04.2023 To 26.04.2023	Lecture interspersed with discussions
42	Register set, and Memory Organization		
43	Addressing modes in 8051		
44	8051 Instruction set		
45	Example of 8051 ALP		
46	Bit Instructions and Branch Instructions		

47	Interfacing of peripherals- Instruction set, programming example
48	I/O ports
49	Timers and Counters Introduction
50	TCON, TMOD Registers Structure
51	Timers Programming examples
52	8051 Interrupts
53	Serial Communication in 8051
54	Modes in serial COM.
55	Serial Port Programming

UNIT-V ARM Architectures and Processors

CO5: Recognize the full power of the PIC microcontroller advanced architecture and features.

TB3: PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18xx, Muhammad Ali Mazidi-RolindD.Mckinay - Danny causey -Pearson Publisher 21st Impression.

56	PIC Architecture Block diagram of basic PIC 18 micro controller	From 27.04.2023 To 06.05.2023	Lecture interspersed with discussions
57	registers I/O ports		
58	Programming in C for PIC: Data types		
59	I/O programming		
60	logical operations		
61	data conversion		
62	Architecture and interfacing of DMA controller (8257)		

TEXTBOOKS:

1. A. K Ray, K.M. Bhurchandhi, "Advanced Microprocessor and Peripherals", Tata McGrawHill Publications, 2000.
2. The 8051 Microcontrollers and Embedded systems Using Assembly and C, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; Pearson 2-Edition, 2011.
3. PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18xx, Muhammad Ali Mazidi-RolindD.Mckinay - Danny causey -Pearson Publisher 21st Impression.

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TENTATIVE LESSON PLAN: R2032022

Course Title: ELECTRICAL MEASUREMENTS AND INSTRUMENTATION (R2032022)		
Section :	Date : 28.12.2022	Page No : 01 of 03
Revision No : 00	Prepared By: T. MAHA LAKSHMI	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery		
UNIT-I Analog Ammeter and Voltmeters CO1 :Students are able to choose right type of instrument for measurement of ac and dc Electrical quantities TB:: Electrical & Electronic Measurement & Instruments by A.K.Sawhney DhanpatRai & Co.Publications.					
1	Classification	From: 02.01.2023 To: 21.01.2023	Lecture interspersed with discussions		
2	deflecting, control and damping torques				
3, 4	PMMC instruments: Construction, Torque equation				
5	moving iron type instruments: Construction, Torque equation				
6	electrostatic instruments: Construction, Torque equation				
7	Range extension				
8, 9	Effect of temperature				
10	Errors and compensations				
11	advantages and disadvantages.				
12	Current Transformer construction, theory, errors				
13, 14	Potential Transformer-construction, theory, errors				
UNIT-II: Analog Wattmeters and Power Factor Meters CO2 :Students are able to choose right type of instrument for measurement of power and power factor. TB:: Electrical & Electronic Measurement & Instruments by A.K.Sawhney DhanpatRai & Co.Publications.					
15	Electrodynamometer type wattmeter (LPF and UPF)				Lecture interspersed
16, 17	Power factor meters: Dynamometer construction				
18	Power factor meters: Dynamometer theory,				
19, 20	Power factor meters: Dynamometer torque equation				
21	Power factor meters: advantages and disadvantages				

22	M.I type (Single phase and Three phase): construction, theory, torque equation, advantages and disadvantages	From: 23.01.2023 To: 11.02.2023	with discussions
23	M.I type (Single phase and Three phase): theory		
24	M.I type (Single phase and Three phase): torque equation		
25, 26	M.I type (Single phase and Three phase): advantages and disadvantages		
27, 28	Electrodynamometer type wattmeter (LPF and UPF)		

UNIT-III Measurements of Electrical parameters

CO3 : Students are able to select right type for measurement of R, L,C.

TB:: Electrical & Electronic Measurement & Instruments by A.K.Sawhney DhanpatRai & Co.Publications.

29, 30	DC Bridges: Method of measuring low	From: 13.02.2023 To: 18.03.2023	Lecture interspersed with discussions
31	Method of medium resistance		
32	Method of high resistance		
33	sensitivity of Wheat stone's bridge		
34	Kelvin's double bridge for measuring low resistance		
35, 36	Loss of charge method for measurement of high resistance		
37	Megger		
38	measurement of earth resistance		
39	AC Bridges: Measurement of inductance		
40	quality factor		
41	Maxwell's bridge		
42	Hay's bridge,		
43	Anderson's bridge		
	measurement of capacitance		
44	loss angle		
45	Desauty's bridge		
46	Schering Bridge		
47	Wagner's earthing device		
48	Wien's bridge		

UNIT-IV Transducers**CO4 : Students are able to understand the effectiveness of Transducer****TB :: Electrical & Electronic Measurement & Instruments by A.K.Sawhney DhanpatRai & Co.Publications.**

No. of Periods	TOPIC	DATE	Mode of Delivery
49, 50	Definition	From: 20.03.2023 To: 08.04.2023	Lecture interspersed with discussions
51	Classification		
52	Resistive Transducer		
53	Inductive Transducer		
54	Capacitive Transducer		
55, 56	LVDT		
57	Strain Gauge		
58	Thermistors		
59	Thermocouples		
60	Piezoelectric Transducers		
61, 62	Photo Diode Transducers		
63	Digital shaft encoders		
64	Hall effect sensors		

UNIT-V Digital meters**CO5 : Students are able to able to understand Digital Meters.****TB :: Electrical & Electronic Measurement & Instruments by A.K.Sawhney DhanpatRai & Co.Publications.**

No. of Periods	Tutorial	DATE	Mode of Delivery
65	Digital voltmeter	From: 04.04.2023 To: 29.04.2023	Lecture interspersed with discussionss
66	Successive approximation DVM		
67, 68	Ramp type DVM		
69	Integrating type DVM		
70	Digital frequency meter		
71	Digital multimeter		
72	Digital tachometer		
73, 74	Digital Energy Meter		
75	LCR Q meter		
76	Power Analyzer		

77	Measurement of phase difference		
78	Measurement of Frequency		
79	hysteresis loop		
80, 81	using lissajous patterns in CRO		



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TENTATIVE LESSON PLAN

Course/Code: Computer Networks / R203205K

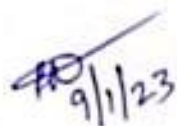
Year / Semester : III/II

A.Y: 2022-23

S.No	TOPIC	Date	Mode of Delivery
UNIT –I PHYSICAL LAYER CO1:: Demonstrate how computer networks are organized with the concept of layered approach, identify the different types of network topologies and discuss different transmission media. TB :: 1. Introduction to data communication and networking by Behrouz Forouzan ,4thEdition McGraw HillEducation,2017. TB :: 2.Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.			
1	Introduction, Network Types	From: 09.01.2023 To: 01.02.2023	PPT, Onboard Lecture interspersed with discussions
2	LAN, MAN, WAN		
3	Network Topologies		
4	Reference models- The OSI Reference Model		
5	The TCP/IP Reference Model		
6	A Comparison of the OSI and TCP/IP Reference Models, OSI Vs TCP/IP, Lack of OSI models success		
7	Internet History		
8	Physical Layer –Introduction to Guided Media, Twisted-pair cable		
9	Coaxial cable, Fiber optic cable		
10	unguided media introduction		
11	Wireless-Radio waves, microwaves, infrared		
12	Tutorial		
UNIT –II DATALINK LAYER CO2:: Analyze data link layer services, functions and protocols like HDLC and PPP etc. TB :: 1. Introduction to data communication and networking by Behrouz Forouzan ,4thEdition McGraw HillEducation,2017. TB :: 2. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.			
13	Design issues	From: 02.02.2023 To: 25.02.2023	Onboard Lecture interspersed with discussions
14	Framing: fixed size framing, variable size framing.		
15	flow control		
16	error control		
17	error detection and correction codes		
18	CRC, Checksum: idea, one's complement internet		

	checksum,		
19	services provided to Network Layer		
20	Elementary Data Link Layer protocols: simplex protocol, Simplex stop and wait, Simplex protocol for Noisy Channel		
21	Sliding window protocol: One bit, Go back N, Selective repeat-Stop and wait protocol,		
22	Data link layer in HDLC: configuration and transfer modes, frames, control field		
23	Point to point protocol (PPP): framing, transition phase, multi-link PPP		
24	Tutorial		
<p>UNIT - III MEDIA ACCESS CONTROL CO3:: Compare and Classify various medium access control protocols and acquire knowledge on the concept of wired LANs. TB :: 1. Introduction to data communication and networking by Behrouz Forouzan ,4thEdition McGraw HillEducation,2017. TB :: 2.Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.</p>			
25	Random Access: ALOHA ,CSMA,	From: 27.02.2023 To: 25.03.2023	PPT, Onboard Lecture interspersed with discussions
26	CSMA/CD, CSMA/CA		
27	Controlled Access: Reservation, Polling, Token Passing		
28	Channelization: TDMA, FDMA		
29	CDMA		
30	Wired LANs: Ethernet, Ethernet Protocol		
31	Standard Ethernet, Fast Ethernet(100 Mbps),		
32	Gigabit Ethernet, 10 Gigabit Ethernet		
33	Tutorial		
<p>UNIT -IV THE NETWORK LAYER DESIGN ISSUES CO4:: Analyze various network routing algorithms, congestion prevention policies and ac knowledge on how networks can be connected, their addressing schemes and various versio Internet protocols. TB :: 1. Introduction to data communication and networking by Behrouz Forouzan ,4thEdition McGraw HillEducation,2017. TB :: 2.Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.</p>			
34	Store and Forward Packet Switching-Services Provided to the Transport layer	From: 27.03.2023 To: 19.04.2023	PPT, Onboard Lecture interspersed with discussions
35	Implementation of Connectionless Service		
36	Implementation of Connection Oriented Service, Comparison of Virtual Circuit and Datagram Networks		
37	Routing Algorithms-The Optimality principle-Shortest path, Flooding		
38	Distance vector		
39	Link state, Hierarchical		
40	Congestion Control algorithms-General principles of congestion control, Congestion prevention polices		

41	Approaches to Congestion Control-Traffic Aware Routing- Admission Control-Traffic Throttling- Load Shedding		
42	Traffic Control Algorithm-Leaky bucket & Token bucket		
43	Internet Working: How networks differ- How networks can be connected		
44	Tunnelling, internetwork routing- Fragmentation, network layer in the internet,		
45	IP Version 4 protocol- IP addresses, Class full Addressing, CIDR		
46	NAT- Subnets, The main IPV6 header, Transition from IPV4 to IPV6, Comparison of IPV4 & IPV6- Internet control protocols		
47	ICMP,ARP,DHCP		
48	Tutorial		
UNIT -V THE TRANSPORT LAYER & THE APPLICATION LAYER			
CO5:: Illustrate transport layer and application layer services and client server protocols working the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.			
TB :: 1. Introduction to data communication and networking by Behrouz Forouzan ,4thEdition McGraw HillEducation,2017.			
TB :: 2.Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHL.			
49	Introduction-services- port number, User data gram protocol, UDP services, UDP applications	From: 20.04.2023 To: 06.05.2023	PPT, Onboard Lecture interspersed with discussions
50	TCP services- TCP features- Segment, windows in TCP		
51	flow control-Error control		
52	Congestion control in TCP		
53	Application Layer - World Wide Web: HTTP		
54	Electronic mail-Architecture- web based mail		
55	Email security- TELENET-local versus remote Logging		
56	Domain Name System: Name Space		
57	DNS in Internet - Resolution-Caching		
58	Resource Records.DNS messages- SNMP		
59	Tutorial		


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TENTATIVE LESSON PLAN: R1942021 POWER SYSTEM OPERATION AND CONTROL

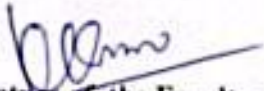
Course Title: POWER SYSTEM OPERATION AND CONTROL			
Section :	Date: 05-12-2022	Page No: 1 of 3	
Revision	Prepared by : Mr.K.NARENDRA BABU	Approved by :HOD	
Tools : Black board, PPTs			
No.of	Topics	Date	Mode of
UNIT-I Economic Operation of Power Systems			
CO1: Able to compute optimal scheduling of Generators			
TB: Power System Operation and Control by S.Sivanagaraju, G.Sreenivasan, Dorling Kindersley (India) Pvt. Ltd 4th Edition 2014.			
1	Introduction	05.12.22 To 24.12.22	Lectures interspersed with discussions
2	Optimal operation of Generators in thermal Power Stations		
3	heat rate Curve, Cost Curve		
4	Incremental fuel and Production costs		
5	Input - output characteristics		
6	Optimum generation allocation with line losses neglected.		
7	Numerical Problems		
8	Optimum generation allocation including the effect of		
9	Loss coefficients		
10	General transmission line loss formula		
11	Numerical Problems		
UNIT-II Hydrothermal Scheduling & Unit Commitment			
CO2: Able to acquaint with the generating principle of operation and design of HVDC, AC and Impulse voltages and currents..			
TB: Power System Operation and Control by S.Sivanagaraju, G.Sreenivasan, Dorling Kindersley (India) Pvt. Ltd 4th Edition 2014.			
12	Optimal scheduling of Hydrothermal System	26.12.22 To 21.01.23	Lectures interspersed with discussions
13	Hydroelectric power plant models		
14	Mathematical Formulation		
15	Solution Technique		
16	scheduling problems		
17	Long term hydro scheduling problem.		
18	Short term hydro scheduling problem.		
19	Short term thermal scheduling problem		
20	Short term hydrothermal scheduling problem		
21	Numerical Problems		
22	Need for unit commitment		
23	constraints in unit commitment		
24	cost function formulation		
25	Optimal unit commitment problem solution		
26	priority ordering		
27	dynamic programming		
28	Numerical Problems		

UNIT-III Load Frequency Control-I

CO3: Able to understand importance of the frequency single area systems

TB: Power System Operation and Control by S.Sivanagaraju, G.Sreenivasan, Dorling Kindersley (India) Pvt. Ltd 4th Edition 2014.

29	Modeling of steam turbine, generator, mathematical	23.01.23 To 28.01.23 & 06.02.23 To 18.02.23	Lectures interspersed with discussions
30	Transfer function,		
31	Necessity of keeping frequency constant.		
32	Definitions of Control area		
33	Single area control system		
34	Block diagram representation of an isolated power system		
35	Steady state analysis		
36	Dynamic response		
37	Uncontrolled case.		
38	Proportional plus integral control of single area		
39	Its block diagram representation		
40	steady state response		
41	Numerical Problems		
42	Tutorial		
UNIT-IV Load Frequency Control-II			
CO4: Able to understand importance of PID controllers in single area and two area systems			
TB: Power System Operation and Control by S.Sivanagaraju, G.Sreenivasan, Dorling			
43	two area system uncontrolled case	20.02.23 To 11.03.23	Lectures interspersed with discussions
44	two area system controlled case		
45	Tie-line bias control		
46	Load Frequency Control and Economic dispatch control.		
47	Numerical Problems		
48	Tutorial		
UNIT-V Compensation in Power Systems			
49	Overview of Reactive Power controls	13.03.23 To 01.04.23	Lectures interspersed with discussions
50	Reactive Power compensation in transmission systems		
51	Advantages and disadvantages of different compensating		
52	load compensation		
53	Specifications of load compensator		
54	Uncompensated transmission lines		
55	compensated transmission lines		
56	introduction to FACTS controllers		
57	Types of FACTS devices		
58	Need of FACTS controllers		
59	Numerical Problems		
60	Tutorial		



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TENTATIVE LESSON PLAN
HVAC&DC TRANSMISSION – R194202B

Course Title: HVAC&DC TRANSMISSION			
Branch : EEE		Date : 05.12.2022	
Revision No : 00		Prepared By : Mr. S.NAGESWARA RAO	Approved By : HOD

Tools: On Board, PPTs

S.NO.	TOPIC	Date	Mode of Delivery
UNIT –I INTRODUCTION OF EHV AC TRANSMISSION			
CO1::Acquaint with HV transmission system with regard to power handling capacity, losses, conductor resistance and electrostatic field associate with hv. Further knowledge is gained in area of bundle conductor system to improve electrical and mechanical performance.			
TB:: HVDC Power Transmission Systems: Technology and system Interactions – by K.R.Padiyar, New Age International (P) Limited, and Publishers.			
1	Necessity of EHV AC transmission	From: 05.12.2022 To: 24.12.2022	Lecture interspersed with discussions
2	Advantages and problems		
3	Power handling capacity and line losses		
4	Mechanical considerations		
5	Resistance of conductors		
6	Electrostatics		
7	Field of sphere gap		
8	Field of line charges and properties		
9	Charge ~ potential relations for multi-conductors		
10	Surface voltage gradient on conductors		
11	Bundle spacing and bundle radius		
12	Examples		
13	Distribution of voltage gradient on sub conductors of bundle		
UNIT –II CORONA EFFECTS			
CO2::Develop ability for determining corona, radio interference, audible noise generation and frequency spectrum for single and three phase transmission lines.			
TB:: HVDC Power Transmission Systems: Technology and system Interactions – by K.R.Padiyar, New Age International (P) Limited, and Publishers.			
14	Power loss and audible noise (AN)	From: 26.12.2022 To: 13.01.2023	Lecture interspersed with discussions
15	Corona loss formulae		
16	Charge voltage diagram		
17	Generation – characteristics		
18	Limits and measurements of AN		
19	Relation between 1-phase and 3-phase AN levels		
20	Examples		
21	Radio interference (RI)		
22	Corona pulses generation		
23	Properties and limits		

24	Frequency spectrum		
25	Modes of propagation		
26	Excitation function		
27	Measurement of RI, RIV and excitation functions		
28	Examples.		
29	Problems		
UNIT –III BASIC CONCEPTS OF DC TRANSMISSION CO3:: Acquire knowledge in transmission of HVDC power with regard to terminal equipments type of HVDC connectivity and planning of HVDC system. TB:: HVDC Power Transmission Systems: Technology and system Interactions – by K.R.Padiyar, New Age International (P) Limited, and Publishers.			
30	Economics & Terminal equipment of HVDC transmission systems;	From: 18.01.2023 To: 28.01.2023	Lecture interspersed with discussions
31	Types of HVDC Links		
32	Apparatus required for HVDC Systems	From: 06.02.2023 To: 17.02.2023	
35	Comparison of AC &DC transmission		
36	Application of DC Transmission System		
37	Planning & Modern trends in DC transmission		
38	Problems		
39	Problems		
40	Problems		
UNIT –IV ANALYSIS OF HVDC CONVERTERS AND SYSTEMS CONTROL CO4:: Develop knowledge with regard to choice of pulse conversion, control characteristic, firing angle control and effect of source impedance. TB:: HVDC Power Transmission Systems: Technology and system Interactions – by K.R.Padiyar, New Age International (P) Limited, and Publishers.			
41	Choice of Converter configuration	From: 20.02.2023 To: 18.03.2023	Lecture interspersed with discussions
42	Analysis of Graetz		
43	Characteristics of 6 Pulse & 12 Pulse converters		
44	Cases of two 3 phase converters in star –Star mode and their performance		
45	Principal of DC Link Control		
46	Converters Control Characteristics		
47	Firing angle control		
48	Current and extinction angle control		
49	Effect of source inductance on the system		
50	Starting and stopping of DC link		
51	Power Control		
UNIT –V REACTIVE POWER CONTROL IN HVDC AND FILTER CO5:: Develop knowledge of reactive power requirements of conventional control, filters and reactive power compensation in ac. Side of hvdc system. TB:: HVDC Power Transmission Systems: Technology and system Interactions – by K.R.Padiyar, New Age International (P) Limited, and Publishers.			
52	Reactive Power Requirements in steady state		Lecture

53	Conventional control strategies	From: 20.03.2023 To: 01.04.2023	interspersed with discussions
54	Alternate control strategies sources of reactive power		
55	AC Filters – Shunt capacitors		
56	Synchronous condensers		
57	Generation of Harmonics		
58	Characteristics harmonics		
59	Calculation of AC Harmonics		
60	Non – Characteristics harmonics		
61	Adverse effects of harmonics		
62	Calculation of voltage & current harmonics		
63	Effect of Pulse number on harmonics		
64	Types of AC filters, Design of Single tuned Filters and High pass filters		

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

TENTATIVE LESSON PLAN

Course/Code: Embedded Systems (R194204H)

Year / Semester: IV/II

Section: I

A.Y: 2022-23

UNIT -I Introduction

CO1: Analyzing the building blocks of typical embedded systems, applications and communication devices.

TB : Embedded Systems by Shibu k.v.

No. of Periods	TOPIC	Date	Mode of Delivery
1.	Embedded vs. General computing Systems, History of Embedded Systems.	From: 5.12.22 To 28.12.22	Lecture interspersed with discussions
2.	Classifications of Embedded Systems		
3.	major applications of Embedded Systems		
4.	The Typical Embedded System-Core of the Embedded Systems		
5.	Memory		
6.	Passive System and other system Components		
7.	Sensors and Actuators		
8.	Embedded Firmware		
10.	Domain Specific Examples of an Embedded Systems		
11.	Communication Interface		
12.	Characteristics and Quality attributes of an Embedded Systems Application Specific Embedded System-Washing Machine		

UNIT -II Embedded Hardware Design

Co2: Illustrating about various Communication Devices Used in the Embedded Systems.

Tb: Embedded Systems by Raj Kamal Second Edition.

No. of Periods	TOPIC	Date	Mode of Delivery
14.	Analog and Digital Electronic Components	From 29.12.22 To 19.1.23	Lecture interspersed with discussions
15.	I/O Types and Examples		
16.	Serial Communication Devices		
17.	Parallel Device Ports		
18.	Wireless Devices		

19.	Timer and Counting devices		
20.	Real time Clock, Watchdog Timer		

UNIT -III Embedded Firmware Design

CO3: Describing the concept of firmware design approaches, ISR concept and interrupt sources.

TB : EMBEDDED SYSTEMS BY RAJ KAMAL SECOND EDITION.

No. of Periods	TOPIC	Date	Mode of Delivery
21.	Embedded Firmware design approaches	From 20.12.23 To 14.2.23	Lecture interspersed with discussions
22.	Embedded Firmware development languages		
23.	ISR concept, Interrupt Sources		
24.	Interrupt Servicing mechanisms		
25.	Multiple Interrupts		
26.	DMA		
27.	Device Driver Programming		
28.	Concepts of C vs Embedded C , Compiler vs Cross Compiler		

Unit -IV Real Time Operating System and Hardware Software Co Design

CO4: Analyzing of hardware-software tradeoffs and describing the Operating systems basics and RTOS

TB1: Embedded systems by Shibu k.v.

TB2: Embedded systems by Rajkamal second edition.

No. of Periods	TOPIC	Date	Mode of Delivery
29.	Operating Systems Basics	From 15.2.23 To 11.3.23	Lecture interspersed with discussions
30.	Types of Operating Systems		
31.	Task, Process and Threads		
32.	Multiprocessing, Multitasking		
33.	Device Drivers		
34.	Task Scheduling		
35.	Threads processes scheduling		
36.	Task Communication		
37.	Task Synchronization, How to choose an RTOS		
38.	Fundamental Issues in Hardware Software Co-Design		
39.	Computational Models in Embedded design		
40.	Hardware Software Trade-Offs		
41.	Integration of Hardware and Firmware, ICE		

UNIT -V Embedded System Development, Implementation and Testing
CO5: Illustrating the concept of IDE, Hardware debugging, debugging tools and testing tools
TB1: Embedded Systems Architecture by Tammy Neorgaard.
TB2: Embedded systems by Rajkamal second edition.

No. of Periods	TOPIC	Date	Mode of Delivery
42.	The Integrated development Environment	From 13.3.23 To 31.3.23	Lecture interspersed with discussions
43.	Types of files generated on Cross-Compilation		
44.	Disassemblers / Decompiler		
45.	Embedded tools		
46.	Simulators, Emulators, Debugging		
47.	Target Hardware debugging		
48.	Boundary Scan		
49.	Embedded Software Development process and tools		
50.	The Main Software Utility Tool		
51.	CAD and the Hardware		
52.	Translation tools pre-processors		
53.	Debugging Tools		
54.	Quality assurance and Testing of the design		
55.	Testing on host machine		
56.	Simulators		
57.	Laboratory Tools		
58.	TUTORIAL		

Ch. F. Gopal
Signature of the Faculty

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