Orissa School of Mining EngineeringKeonjhar

Department of Electrical Engineering

Lesson Plan

The Vision of the Electrical Engineering Department:

To provide excellent knowledge and enrich the problem solving skills of the students in the field of Electrical Engineering with a focus to prepare the students for industry need, recognized as innovative leader, responsible citizen and improve the environment.

The Mission of Electrical Engineering Department:

1. Prepare the students with strong fundamental concepts, analytical capability, and problem solving skills. Create an ambience of education through faculty training, self-learning, sound academic practices and research endeavors.
2. Provide opportunities to promote organizational and leadership skills in students through various extra- curricular and co-curricular events.
3. To make the students as far as possible industry ready to enhance their employability in the industries.
4. To improve department industry collaboration and to maintain effective operational environment.

Program Educational Objectives :

The Program Educational Objectives (PEOs) of the Electrical Engineering Department are given below:

1. PEO1- To engage in Design of Systems, tools and applications in the field of electrical Engineering and allied engineering Industries.
2. PE02- To apply the knowledge of electrical engineering to solve problems of social relevance and/or pursue higher education
3. PE03- To work effectively as individuals and as team members in multidisciplinary projects by exhibit leadership capability, triggering social and economic commitment and inculcate community services and protect environment
4. PEO4- Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

Program Specific Outcome (PSOs)Program Outcome(POs):

Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

1. **Problem Analysis: Identify and analyze well defined engineering problems using codified standard methods.**
2. **Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of system components or processes to meet specified needs.**
3. **Engineering Tools,Experimentation and Testing : Apply modern engineering tools and appropriate technique to conduct standard tests and measurements .**
4. **Engineering Practices for Society ,Sustainability and Environment : Apply appropriate technology in context of society ,sustainability ,environment and ethical practices.**
5. **Project Management: Use engineering management principles individually ,as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities .**
6. **Life-long Learning : Ability to analyze individual needs and engage in updating in the context of technological changes.**

Program Specific Outcome(PSOs)

PSO1:Apply engineering and laboratory skills for testing operation and maintenance of electrical machine ,power and energy system

PSO2:Model and analyze ,realize physical systems ,components or processes related to electrical engineering system

PSO3:work professionally in power system engineering ,electrical machine and circuit system

Subject : Electrical Measurement & Instrumentation			
Discipline: **Electrical Engineering**		Name of the Faculty: **Er. Sitanjali Mardi**	
Course Code:	**TH- 3**	Semester:	**4th**
Total Periods:	**75**	Examination:	**Summer 2023-24**
Theory Periods:	**5P/W**	Class Test:	**20**
Maximum Marks:	**100**	End Semester Examination:	**80**

		Class Day	Theory Topics to be covered	Remarks
1st		1st 16.1.24	INTRODUCTION/BRIEFING, Concept of measuring instrument(electrical,electronics) with some examples	
		2nd, 17.1.24	**CHAPTER 1- MEASURING INSTRUMENTS** 1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance	
		3rd 18.1.24	1.2 Classification of measuring instruments. 1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments.	
		4th 22.1.24	1.4 Calibration of instruments Revision class	
		5th 24.1.24	**CHAPTER 2 - ANALOG AMMETERS AND VOLTMETERS** 2.1.1 Describe Construction, principle of operation, errors, ranges merits and demerits of Moving iron type instruments.	
2nd		1st 25.1.24	2.1.2 Describe Construction, principle of operation, errors, ranges merits and demerits of Permanent Magnet Moving coil type instruments	
		2nd 29.1.24	2.1.3 Describe Construction, principle of operation, errors, ranges merits and demerits of Dynamometer type instruments	

		3rd 2nd30.1.24	2.1.4 Describe Construction, principle of operation, errors, ranges merits and demeritsof Rectifier type instruments	
		4th 31.1.24	2.1.5 Describe Construction, principle of operation, errors, ranges merits and demerits of induction type instruments	
		5th 1.02.24	2.2 Extend the range of instruments by use of shunts and Multipliers	
3rd		1st 5.02.24	2.3 Solve Numerical	
		2nd 6.2.24	**Revision class**	
		3rd 7.02.24	**3.WATTMETERS AND MEASUREMENT OF POWER** 3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF type)	
		4th 8.02.24	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (UPF type)	
		5th 12.02.24	3.2 The Errors in Dynamometer type wattmeter and methods of their correction	
4th		1st 13.02.24	3.3 Discuss Induction type watt meters	
		2nd 15.2.24	**Revision class.**	
		3rd 19.02.24	**4. ENERGYMETERS AND MEASUREMENT OF ENERGY** 4.1 Introduction	
		4th 20.02.24	4.2Single Phase Induction type Energy meters – construction & working principle	
		5th 21.02.24	4.2Single Phase Induction type Energy meters compensation & adjustments	
5th		1st 22.02.24	4.3Testing of Energy Meters.	
		2nd 26.02.24	CLASS TEST-1	

		3rd 27.02.24	REVISION	
		4th, 28.02.24	**5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR** 5.1Tachometers, types and working principles 5.2 Principle of operation and construction of Mechanical resonanceType frequency meters.	
		5th 29.02.24	5.2Principle of operation and construction of Electrical resonance Type frequency meters.	
6th		1st 05.03.24	5.3 Principle of operation and working of Dynamometer type single phase power factor meters.	
		2nd 6.03.24	5.3 Principle of operation and working of Dynamometer type three phase power factor meters.	
		3rd 7.03.24(2 class)	REVISION **6. MEASUREMENT OF RESISTANCE, INDUCTANCE & CAPACITANCE** 6.1 Classification of resistance 6.1.1Measurement of low resistance by potentiometer method	
		4th 8.3.24	6.1..2.Measurement of medium resistance by wheat Stone bridge method.	
		5th 12.3.24	6.1..3.Measurement of high resistance by loss of charge method	
7th		1st 13.3.24	6.2 Construction, principle of operations of Megger for insulation resistance measurement	
		2nd 15.3.24	6.2 Construction, principle of operations of Earth tester for earth resistance measurement .	
		3rd 19.3.24	6.3Construction and principles of Multimeter. (Analog and Digital)	
		4th 20.03.2024	6.4Measurement of inductance by Maxewell's Bridge method 6.5Measurement of capacitance by Schering Bridge method	

		5th 21.03.24	REVISION	
8th		1st 22.3.24	**8.OSCILLOSCOPE** 8.1 Principle of operation of Cathode Ray Tube	
		2nd 27.3.24	8.2 Principle of operation of Oscilloscope (with help of block diagram	
		3rd 28.3.24	8.2 Principle of operation of Oscilloscope (with help of block diagram	
		4rth 2.4.24	8.3Measurement of DC Voltage & current	
		5th 3.4.24	8.3Measurement of DC Voltage & current	
9th		1st, 4.4.24	**INTERNAL ASSESSMENT**	
		2nd, 8.4.24	8.4 Measurement of AC Voltage, current, phase & frequency	
		3rd 9.4.24	8.4 Measurement of AC Voltage, current, phase & frequency	
		4th 10.4.24	8.4 Measurement of AC Voltage, current, phase & frequency	
		5th 15.4.24	. **CLASS TEST 2**	
10th		1st 16.4.24	**REVISION**	
		2nd 18.4.24	**Doubt clearing**	
		3rd 22.4.24	**PYQS Discussion**	
		4th 23.4.24	**PYQS Discussion**	

		5th 24.4.24	DOUBT CLEARING CLASS	
11th		1st 25.4.24	VST	
Total class-51/60				

15/1/2024

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PRINCIPAL

15-1-24