

Lesson Plan

Name of Faculty : SANDEEP YADAV

Discipline : Electrical Engineering

Semester : 5th

Subject : Computer Aided Electrical Machine design

Work load : Lecture-03, Tutorial-01

	Theory	
		Topic
Section A		INTRODUCTION: Review of syllabus
		Brief about all Electrical machines
		Application of computer aided programming in machine design
		General Features and limitations of Elect. Machine design
		Heat dissipation, temp rise heating and cooling cycle
		Basic design principle
		Output Equation of ac machines
		Specific Electrical and magnetic loading
		Effect of size and ventilation
Section B		DESIGN OF INDUCTION MOTORS: Three Phase Induction Motor:

	Gap contraction factor, Real and apparent flux density
	Magnetic current of transformer and rotating machine
	No load current of transformer and induction motor
	Leakage flux and reactance calculation
	Design of field magnet
	rotor bars& slots area, end ring
	Specific Electrical and magnetic loading for motor
	Core design
	Yoke design
	Problems on Core and Yoke design
Section C	Complete Detailed design problem on t/f
	DESIGN OF TRANSFORMER: Output Equations of Single Phase and Three Phase Transformers,
	Design of stator slots and Winding. Design of Salient and 18 non- salient Pole Rotors
	Armature design
	Design of field winding
	Problem on armature and field design
	Complete Detailed design problem on dc machine with a common specification
	Output Equation of ac machines and loadings
	Stator Design
	Rotor Design
	Problems on Stator Design

	Problems on rotor Design
	Synchronous machine output equation
	Stator Design- Synchronous m/c
	Rotor Design- Synchronous m/c
Section D	Complete Detailed design problem DC machine with a common specification
	Computer aided application and Matlab based programs for t/f and rotating machines
	Synthesis and analysis method and flow chart
	DESIGN OF DC MACHINES: Output equation, choice of specific loadings, choice of poles and speed,
	armature diameter, depth of armature core,air gap length
	cross section of armature conductors, armature slots
	design of field system field poles, field coils, commutator.
	Computerization of design Procedures. Development of Computer program and performance prediction
	Optimization techniques and their applications to design Problems