EE461-2: Electrical Machine Design

Course code and name	EE461-2: Electrical Machine Design
Credits units	2 Credit units
Contact hours	4 Contact hours: 1 lecture, 1 tutorial and 2 practical
Instructor name	
Textbook	M.G. Say, Performance and design of A.C. Machines-Affiliated East West Press Pvt. Ltd, New Delhi
Other supplemental materials	-
	Specific course information
a. Course description	Basic principles of electrical machines and transformers design – output equation – standard values of magnetic field density – current loading and their determination – winding arrangement – effect of harmonics produced by winding arrangement and how they can be avoided – principles of application of computer in design
b. Prerequisite	EE456-3
c. Required / Elective	Elective
	Course Learning Outcomes

CLO of the Lecture Activities:

CLO1: Exhibit the study of MMF calculation and thermal rating of various types of electrical machines.

CLO2: Design armature and field systems for D.C machines.

CLO3: Creatively apply knowledge to design core, yoke, windings and cooling systems of transformers.

CLO4: Construct the design of stator and rotor of induction machines.

CLO5: Design stator and rotor of synchronous machines and study their thermal behavior.

CLO of the Laboratory Activities:

CLO1: Verify theory and to improve knowledge learned in class.

CLO2: Formulate and solve problems related to theory.

CLO3: Design and safety conducts an experimental procedure.

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.

CLO5: Communicate critical analysis of scientific information through written reports.

CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- Standard specification for frame size, conductors and insulation of electrical apparatus

- Concept of magnetic circuit, M.M.F of electrical machines

- Design of AC machines: Design of field system, design of armature, design of commutator and brush.

- Design of Transformer: Design of core, design of winding, calculation of circuit parameters -No load current losses efficiency, equivalent leakage reactance

- Design of Synchronous machines: Design of squirrel cage rotor, design of slip ring rotor, design of end rings, Calculation of circuit parameters

- Design of induction machines: design of salient pole machine, short circuit ratio, armature design, armature parameters, estimation of air gap length, design of damper winding

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							

	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							
CLO6							