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Department of Electrical Engineering	
Electrical Machines Lab (63325)	
Total Credits	**1**
major compulsory	
Prerequisites	P1 : Electrical Machines I (63323)

Course Contents

1- Phasor diagram and efficiency test of 1-phase transformer 2- DC separately excited &series generator (characteristics, voltage reg. &efficiency) 3- Open circuit test &short circuit test of 1-phase transformer 4- DC shunt and compound generator (characteristics, voltage reg. &efficiency) 5- DC shunt and compound motor (characteristics, speed reg. &efficiency) 6- 3-phase transformer (balance &unbalanced RLC load, characteristics, phase sequence) 7- 3-phase synchronous generator (wye &delta connections) 8- 3-phase squirrel-cage induction motor (wiring, characteristic, operation, efficiency) 9- 3-phase slip-ring induction motor (characteristics) 10- 3-phase synchronous motor (characteristics, under excited &over excited) 11- 1-phase induction motor capacitor run &capacitor start motor 12- 1-phase generator synchronized with the mains supply (conditions of parallel operation)

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Ability to implement, verify and operate AC &DCrotational machines. In addition to gain the necessary understanding of their electrical characteristics	A	20 %
2	Ability to relate the theoretical aspects of various electrical machines with their practical characteristics and behaviors	D	15 %
3	To become Familiar with the measurements of voltage, current, power, torque &speed	B	25 %
4	Ability to implement and test various electrical machine circuits	C	15 %
5	Knowing how to author a good technical report taking into consideration that the following elements. Such as, paragraph, calculation, results and conclusion are all available	C	25 %

Textbook and/ or Refrences

Electrical Machines Lab Authors: O. Tamimi Electric Machinarey Fundamentals Fourth Edition Stephen Chapman

Assessment Criteria	Percent (%)
Projects	10 %
Reports	40 %
Laboratory Work	25 %
Final Exam	25 %

Course Plan

Week	Topic
1	Phasor diagram and efficiency test of 1-phase transformer
2	DC separately excited &series generator (characteristics, voltage reg. &efficiency)
3	Open circuit test &short circuit test of 1-phase transformer
4	DC shunt and compound generator (characteristics, voltage reg. &efficiency)
5	DC shunt and compound motor (characteristics, speed reg. &efficiency)
6	3-phase transformer (balance &unbalanced RLC load, characteristics, phase sequence)
7	3-phase synchronous generator (wye &delta connections)
8	3-phase squirrel-cage induction motor (wiring, characteristic, operation, efficiency)

9	3-phase slip-ring induction motor (characteristics)
10	3-phase synchronous motor (characteristics, under excited &over excited)
11	1-phase induction motor capacitor run &capacitor start motor
12	1-phase generator synchronized with the mains supply (conditions of parallel operation)