



University of Tehran
School of Electrical and Computer Engineering

Course:	8101016 Electrical Machines Lab 1									
Course type:	EE*						CE*			Credit: 1
	Com	E	P	B	Con	D	SW	HW	IT	
	Required	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Elective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Level:	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>									
Co-requisite(s):	Electrical machines 2									
Prerequisite(s):	Electrical machines 1									
Prerequisite by topic:	Being introduced to <ol style="list-style-type: none"> 1. Magnetic circuits 2. Electromechanical-energy-conversion principles 3. DC electrical machines 4. Single-phase and three-phase transformers 5. Construction of induction motors 									
Textbook(s):	<ol style="list-style-type: none"> 1. P. S. Bimbhra, Generalized Theory of Electrical Machines, Khanna Publishers, India, 2007. 2. J. Nagrath, D. P. Kothari, Electrical Machines, McGraw Hill, 2006 3. Stephan J. Chapman, Electric Machinery Fundamentals, McGraw Hill, 2004 4. P. C. Sen, Principles of Electric Machines and Power Electronics, John Wiley & Sons, 2013 5. A.E.Fitzgerald, Electric Machinery, McGraw Hill, 2003 									
Coordinator:	Hamid Lesani, Professor, School of ECE.									
Goals:	Introduction to construction and characteristics of DC electrical machines Introduction to single-phase and three-phase transformers Introduction to winding of stator of three-phase motors									
Outcome:	Upon successful completion of the course, students will: <ol style="list-style-type: none"> 1. Apply different types of transformers 2. Understand different applications of various types of DC motors 3. Wind coils for stator of three-phase machines 									
Topics:	<ol style="list-style-type: none"> 1. Introduction to electrical risks at workplace and electrical safety solutions 2. Introduction to construction and components of induction motors and winding of three-phase machines 3. Carrying out some experiments on single-phase transformer such as no-load, short-circuit, polarity, DC resistance, and loading 									

	<ol style="list-style-type: none"> 4. Analysis of different types of commutators in separately-excited DC generators 5. Speed control of Shunt DC motor and calculation of efficiency 6. Characteristic of series DC motor and its starting 7. Determining the characteristic of shunt and separately excited generators 8. Introduction to three-phase transformer and types of connections and methods for diagnosing the transformers 9. To wind coils for stator of three-phase machines 						
Computer usage:							
Assignments:	Every session includes a pre report of current session and report of previous session						
Projects:							
Grading:	<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Pre reports and reports</td> <td style="text-align: right;">50 %</td> </tr> <tr> <td>Written exam:</td> <td style="text-align: right;">25 %</td> </tr> <tr> <td>Oral exam:</td> <td style="text-align: right;">25 %</td> </tr> </table>	Pre reports and reports	50 %	Written exam:	25 %	Oral exam:	25 %
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Written exam:	25 %						
Oral exam:	25 %						
Further readings:	Prepared textbook including experiments instructions						
Prepared by:	Hamid Lesani, Professor, School of ECE.						
Date:	December 9. 2017						

*EE: Electrical Engineering		CE: Computer Engineering	
Com	Communications	SW	Software
E	Electronics	HW	Hardware
P	Power	IT	Information Technology
B	Bioelectronics		
Con	Control		
D	Digital System		