



University of Tehran
School of Electrical and Computer Engineering

Course:	8101326 – Special Electrical Machines									
Course type:	EE*						CE*			Credit: 3
	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):	None.									
Prerequisite(s):	Electrical Machines III (8101458)									
Prerequisite by topic:										
Textbook(s):	1. Helmut Moczala, et. al., Small Electric Motors, IET Publisher, UK. 2007 (It has been translated into Persian and published by the University of Tehran Press).									
Coordinator:	Jawad Faiz, Professor, School of ECE.									
Goals:	Teaching special types of electrical motors which are used in home appliances and small business and workshops.									
Outcome:	Upon successful completion of the course, students will: <ol style="list-style-type: none"> 1. Learn the fundamentals of operating very applicable small electrical motors. 2. Be able to analyze performance of different types of small electrical motors. 3. Be familiar with structure, control and operational modes of these motors. 4. Be able to select a motor for a defined application. 5. Be able to apply different methods of measurement in small drive systems. 6. Be familiar with more efficiency and softer application of electrical motors in different conditions. 									
Topics:	<ol style="list-style-type: none"> 1) Drives with small motors. 2) Operation of multiphase induction motor. 3) Operation and application of polyphase induction motors. 4) Shaded-pole induction motors. 5) Synchronous motors. 6) Universal motors. 7) Direct current motors. 8) Electronic circuits for small electric motors. 9) Brushless direct current motors. 									

	10) Stepper motors. 11) Measurement in small drive systems. 12) Vibration and noise problems in small drives.
Computer usage:	Using a number of professional computer softwares for more efficient learning.
Assignments:	Homework
Projects:	Dismantling one of special electrical machines by group of 4 students and reporting their work to other students of class.
Grading:	Assignments: 10 % Projects: 15 % Quizzes: 15 % Midterm exams: 20% Final exam: 40 %
Further readings:	[1] EV. Armensky and G.B. Falk, Fractional-horsepower electrical machines, Mir Publisher, Moscow. 1985.
Prepared by:	
Date:	September 22. 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		