



University of Tehran
School of Electrical and Computer Engineering

Course:	8101391 – Electric fields and dielectrics		
Course type:	Elective	EE*	Credit: 3
Level:	Graduate		
Co-requisite(s):			
Prerequisite(s):			
Prerequisite by topic:	Fundamentals of electromagnetics and advanced mathematics		
Textbook(s):	[1] Gorur G. Raju, <i>Dielectrics in Electric Field</i> , CRC Press, 2016. [2] Mohseni, <i>Advanced high voltage engineering</i> , University of Tehran, 1998 (in Persian)		
Coordinator:	Amir Abbas Shayegani Akmal		
Goals:	Behaviors of dielectric under electric field are essential knowledge for application of the dielectrics in high voltage apparatus. Therefore the calculation of electric field in high voltage apparatus is necessary. Today computers with numerical methods are used for calculation of electric fields. The goals of the course are describe methods of calculation of electric field, behavior of dielectric under electric field and method of dielectric parameters measurement.		
Outcome:	Upon successful completion of the course, students will be able <ol style="list-style-type: none"> 1. To calculate of electric field with proper software. 2. To evaluate behavior of the dielectric materials. 3. To measure parameters of dielectric materials. 		
Topics:	<ol style="list-style-type: none"> 1- Fundamentals of electrostatic 2- Materials in electric fields 3- Calculation of simple fields 4- Filed analysis with potential equations 5- Numerical methods for calculation of electric fields 6- Filed calculation software and package 7- Dielectric properties and measurement 		
Computer usage:	Software of electric field calculation such as COMSOL		
Assignments:	2 computer assignment and 3 analytic assignment		

Projects:	Research on dielectric materials.
Grading:	Assignments: 25% Quiz: 5% Midterm exams: 20% Final exam: 50%
Further readings:	
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*EE: Electrical Engineering CE: Computer Engineering IT: Information Technology