



University of Tehran
School of Electrical and Computer Engineering

Course:	8101109 – Power System Analysis 1									
Course type:	EE*						CE*			Credit: 3
	Com	E	P	B	Con	D	SW	HW	IT	
	Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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):	Electric Machines 2 (8101322)									
Prerequisite(s):	Electric Machines 1 (8101320)									
Prerequisite by topic:	Electric circuit analysis, power and energy in single and three-phase circuits, electrical machinery principles									
Textbook(s):	[1] H. Saadat, <i>Power Systems Analysis, 3rd Edition</i> . 2010, [2] J. J. Grainger and W. D. Stevenson, <i>Power Systems Analysis, 3rd Edition</i> . 1994.									
Coordinator:	Farrokh Aminifar, Professor, School of ECE									
Goals:	<ol style="list-style-type: none"> 1. To be familiar with the structure, equipment, and management of conventional and modern electric power systems 2. To know the operation principle and model of generators, transformers, lines, and renewable energy resources 3. To be familiar with the operation of power systems and traveling wave theory and its application in power systems 									
Outcome:	<p>Upon successful completion of the course, students will be able</p> <ol style="list-style-type: none"> 1. To calculate various parameters of electric transmission lines (such as inductance and capacitance) and to model their performances in different conditions 2. To know how a conventional power system works and how would be affected by smart grid technologies 									
Topics:	<ol style="list-style-type: none"> 1) An introduction to electric power systems 2) Basic principles 3) Generator and transformer models 4) Renewable energy resources 5) Transmission line parameters 6) Model and performance of transmission lines 7) Traveling waves 8) Distribution systems 9) Smart grids 									
Computer usage:	The course project is a computer assignment.									
Assignments:	5 to 6 homework assignments									
Projects:	A computer assignment to model a small power system and run the power flow algorithms									
Grading:	Assignments: 20 % Projects: 5 % Quizzes: 5 %									

	Midterm exams: 35% Final exam: 35 %
Further readings:	[1] J. D. Glover, M. S. Sarma, and T. Overbye, <i>Power System Analysis and Design, 5th Edition</i> . 2012
Prepared by:	Farrokh Aminifar
Date:	Aug. 30 th , 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		