



ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE:151228492-151248492 **COURSE TITLE:**Power System Analysis II

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
8	3	0	3	5	Compulsory () Elective (x)	Turkish () English (x)	
Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).							
Math and Basic Science		Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities		
		3 ()					
Assessment		THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
		Type	Number	%	Activity Type	Number	%
Midterm		Midterm	1	45	Quiz		
		Quiz			Lab performance		
		Homework			Report		
		Project			Oral exam		
		Other (.....)			Other (.....)		
Final			1	55			
Makeup exam (Oral/Written)		Written					
Prerequisites		None					
Brief content of the course		Power flow analysis, symmetrical faults, symmetrical components, analysis of unsymmetrical faults, protection systems, power system controls, transient stability.					
Objectives of the course		This course will give students the ability to develop appropriate models for an interconnected power system, and know how to perform power flow, economic dispatch and short circuit analysis. Students should also be able to write a basic power flow computer program. Course also provides students with a complete overview of interconnected power system operation.					
Contribution of the course towards professional education		Students who learn the essential elements of electric power system and understand the specifications required for the design and planning of electrical power network can work in the projects that are related to power system area. This course also provides strong background for graduate-level power system courses.					
Outcomes of the course		<ol style="list-style-type: none"> 1) Learn the methods of power flow analysis of balanced three-phase systems. 2) Learn the modeling and analysis of symmetrical faults. 3) Learn the symmetrical components methods and the analysis of unbalanced three-phase systems. 4) Learn the modeling and the analysis of various unsymmetrical faults. 5) Learn the elements of power control in electric power system. 6) Perform transient stability analysis of a given system under sudden disturbances and faults. 					
Textbook of the course		J. D. Glover, M. S. Sarma "Power System analysis and Design," Brooks/Cole publishing, 5 th edition, 2010.					
Other reference books							
Required material for the course							

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Review of prior knowledge about electric power system analysis
2	Power-flow problem – introduction and important definitions
3	Power-flow problem by Gauss-Siedel
4	Power-flow problem by Newton-Raphson
5	Control of power flow
6	Symmetrical faults
7	Symmetrical components
8,9	Midterm
10	Unsymmetrical faults – part 1
11	Unsymmetrical faults – part 2
12	Circuit breakers and fuse selection
13	Transient stability
14	Protection in power system
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	X			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	X			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1: None

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016