AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Power Systems Economy								
Course Code	EEE552		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	This course aims to introduce and explore a number of engineering and economic aspects for planning, operating and controlling power generation and transmission systems.								
Course Content	Power generation characteristics, economic dispatch problem, thermal unit economic dispatch and methods of solution, dynamic programming, transmission system effects, the unit commitment problem and solution methods, hydrothermal coordination problem and solution techniques, interchange of power and energy.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)	Assoc. Prof. Atilla DÖNÜK								

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	20
Assignment	3	20
Project	2	40

Recommended or Required Reading

1	Power Generation, Operation and Control, Allen J. Wood, Bruce F. Wollenberg (Wiley&Sons)

Week	Weekly Detailed Course Contents	
1	Theoretical	Giriş: Ekonomik önem
2	Theoretical	Characteristics of power generation units
3	Theoretical	Economic dispatch : Definition of the problem and thermal system dispatching
4	Theoretical	Economic dispatch: Methods of solution
5	Theoretical	Transmission system effects: The power flow problem and its solution
6	Theoretical	Transmission system effects: Transmission losses
7	Theoretical	Unit commitment: Constraints
8	Theoretical	Unit commitment: Solution methods
9	Intermediate Exam	Midterm Exam
10	Theoretical	Hydrothermal Coordination: Scheduling problems, plant models
11	Theoretical	Hydrothermal Coordination: Solution methods
12	Theoretical	Interchange of power and energy : Economy interchange
13	Theoretical	Interchange of power and energy : Types of interchange
14	Theoretical	Interchange of power and energy : Power pools, transmission effects
15	Theoretical	Term Project Presentations
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	7	3	130
Assignment	3	6	2	24
Project	2	10	3	26
Midterm Examination	1	7	2	9

Final Examination	1	8	3	11
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Understand power generation systems, their operation in an economic mode, and their control
2	Understand the important terminal characteristics for thermal and hydroelectric power generation systems
3	Learn mathematical optimization methods and apply them to practical operating problems
4	Gain experience in methods that are used in modern control systems for power generation systems
5	Get familiar with the changes in the system development patterns, regulatory structures, and economics.

Programme Outcomes *(Electrical and Electronics Engineering Master)*	
1	Developing and intensifying knowledge that requires expertise in the area of Electrical-Electronics Engineering, and gaining the skills necessary to analyze and solve problems using this knowledge
2	Grasping the inter-disciplinary interaction related to Electrical-Electronics Engineering, interpreting and forming new types of knowledge by combining the knowledge from Electrical-Electronics Engineering and the knowledge from various other disciplines
3	Developing new approaches to solve the complex problems arising in Electrical-Electronics Engineering, coming up with solutions while taking responsibility and carrying out a specific study independently
4	Assessing the knowledge and skill gained in the area of Electrical-Electronics Engineering with a critical view
5	Transferring the current developments and one’s own work in Electrical-Electronics Engineering, to other groups in written, oral and visual forms
6	The ability to control the collecting, interpreting, practicing and announcing processes of the Electrical-Electronics Engineering related to data taking into consideration scientific, cultural and ethical values and the ability to teach these values to others
7	Developing application plans concerning the subjects related to Electrical-Electronics Engineering and the ability to evaluate the end results of these plans within the frame of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	4	4	4	4	4
P2	4	4	4	4	4
P3	4	4	4	4	4
P4	4	4	4	4	4
P5	4	4	4	4	4
P6	4	4	4	4	4
P7	4	4	4	4	4