AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Electric Machine Design								
Course Code	EEE551		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 present design of electrical machines in detail								
Course Content	Principal laws of magnetism, magnetic materials, winding used in electrical machines, inductor and transformer design principals, leakage fluxes in magnetic circuits, effects of resistances, basic machine parameters, dimensioning of electrical machines, losses, design process, finite element analysis.								
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	30
Final Examination	1	30
Assignment	4	20
Project	1	20

Recommended or Required Reading	
1	Design of Rotating Electrical Machines, Juha Pyrhonen, Tapani Jokinen, Valeria Hrabovcova, 2009
2	Transformer and Inductor Design Handbook, Fourth Edition, Colonel Wm. T. McLyman, 2011

Week	Weekly Detailed Course Contents	
1	Theoretical	Review of Principal Laws and Methods
2	Theoretical	Practical Magnetic Materials
3	Theoretical	Windings of Electrical Machines
4	Theoretical	Design of Magnetic Circuits
5	Theoretical	Inductor and Transformer Design
6	Theoretical	Flux Leakage
7	Theoretical	Resistances
8	Intermediate Exam	Midterm Exam
9	Theoretical	Basic Machine Parameters
10	Theoretical	Main Dimensions of Machine
11	Theoretical	Design Process
12	Theoretical	Heat Transfer / Losses
13	Theoretical	Finite Element Analysis
14	Theoretical	Technical Visit
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	To understand principal laws in magnetism
2	To learn magnetic materials used in practical electrical machines
3	To gain experience in rotating and non-rotating electrical machine design process
4	To understand heat transfer and losses in an electrical machine
5	To understand heat transfer and losses in an electrical machine

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