

TOROS ÜNİVERSİTESİ

Faculty Of Engineering
Electrical And Electronics Engineering (English)

Course Information

ELECTROMECHANICAL ENERGY CONVERSION					
Code	Semester	Theoretical	Practice	National Credit	ECTS Credit
		Hour / Week			
EEE306	Spring	3	2	4	5

Prerequisites and co-requisites	
Language of instruction	English
Type	Required
Level of Course	Bachelor's
Lecturer	Assoc. Prof. Ahmet TEKE
Mode of Delivery	Face to Face
Suggested Subject	
Professional practise (internship)	None
Objectives of the Course	"Basics of AC electrical machines and definition of MMF waveforms. Understanding the structure and working principle of synchronous generator. Teaching of the structure and working principle of the synchronous motor. Understanding single and three-phase asynchronous motor structure and its working principle. "
Contents of the Course	"Distributed windings, MMF waveforms, multi-phase windings and rotating field winding factor, harmonic voltages, synchronous machines, cylindrical and salient pole machine types, synchronous and asynchronous machines, Circle diagram, speed control for asynchronous motors, single and three-phase asynchronous motors. "

Learning Outcomes of Course

#	Learning Outcomes
1	Analyses AC electrical machines and MMF waveforms
2	Analyses multi-phase windings and rotating field
3	Analyses winding factor, analyses about harmonic voltages
4	Analyses synchronous generator, perfoms open and short circuit test
5	Analyses synchronous motors and can perform its calculations
6	Analyses asynchronous machines, Analyses single-phase asynchronous motor
7	Analyses three-phase asynchronous motors, Analyses about speed control methods

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Fundamentals of AC electrical machines	lecture
2	MMF waveforms in Distributed windings, multi-phase windings and rotating field	lecture
3	Winding factor, harmonic voltages	lecture
4	Fundamentals of synchronous machine	lecture
5	Structure and working principle of synchronous generator	lecture
6	Open and short circuit test of synchronous generator	lecture
7	Midterm exam	

8	Structure and working principle of synchronous motors	lecture
9	Open and short circuit test of synchronous motors	lecture
10	Introduction of asynchronous machines	lecture
11	Asynchronous generator structure and operating principle of the basics	lecture
12	Speed control methods of Induction motors	lecture
13	Single-phase asynchronous motor structure, open and short circuit tests	lecture
14	Methods of making asynchronous motors	lecture
15		
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	Electric Machinery Fundamentals, S. J. Chapman,		
2	Electrical machines and drives, J. Hindmarsh,		
3	Electric machines and electromechanics, S. Nasar,		
4	Electrical machines, J. Nagrath, Electrical machinery, A. E. Fitzgerald		

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Analyses AC electrical machines and MMF waveforms	1	1,2
2	Analyses multi-phase windings and rotating field	1	1,2
3	Analyses winding factor, analyses about harmonic voltages	1	1,2
4	Analyses synchronous generator, performs open and short circuit test	1	1,2
5	Analyses synchronous motors and can perform its calculations	1	1,2
6	Analyses asynchronous machines, Analyses single-phase asynchronous motor	1	1,2
7	Analyses three-phase asynchronous motors, Analyses about speed control methods	1	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	5	70
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	3	42
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	0	0	0

8	Midterm Exam	1	1	1
9	Quiz	0	0	0
10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	4	4
16	Final Exam	1	1	1
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