AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Advanced Electromagnetic Theory							
Course Code		EEE511		Couse Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		1) Teaching the basic concepts of electrostatics and the concept of Green functions and the methods of using Green functions to solve electrostatic problems 2)To teach basic concepts of magnetostatics and give the ability to apply Green function methods to solve magnetostatic problems. 3) To teach the basic concepts of electrodynamics and give the ability to solve electrodynamic problems with and without radiation 4) To teach the relativistic transformations of electrodynamic potentials, fields charges and currents.							
Course Content		Fundamental concepts and theorems, Time dependent electromagnetic field, Plane Waves, Wave quides and resonant cavity							
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)		Lec. İsmail YARİÇİ							

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	8	20

Recommended or Required Reading	
1	Harrington R. F., Time-Harmonic Electromagnetic Fields , IEEE Press, 2001
2	Jackson Electrodynamics,3rd Ed.
3	Landau-Lifshits Classical electrodynamics.

Week	Weekly Detailed Course Contents	
1	Theoretical	Elektrostatics (Green function formalism)
2	Theoretical	Elektrostatics (multipole expansion)
3	Theoretical	Magnetostatics
4	Theoretical	Magnetostatics (scalar and vector potentials) II
5	Theoretical	Time dependent electromagnetic fields
6	Theoretical	Maxwell Equations
7	Theoretical	Poynting theorem
8	Intermediate Exam	Intermediate Exam
9	Theoretical	Plane Electromagnetic Waves and Wave Propagation
10	Theoretical	Plane Electromagnetic Waves and Wave Propagation
11	Theoretical	Wave Guides and Resonant Cavities
12	Theoretical	Wave Guides and Resonant Cavities
13	Theoretical	Simple radiating systems, scattering and diffraction
14	Theoretical	Special relativity
15	Theoretical	Relativistic transformations of elektromagnetic potentials, fields, charges and currents
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Assignment	4	10	3	52
Project	1	11	3	14

Midterm Examination	1	15	3	18
Final Examination	1	15	3	18
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = **ECTS**				8
25 hour workload is accepted as 1 ECTS				

Learning Outcomes	
1	Solve electrostatic problems,
2	Solve magnetostatic problems
3	Solve electrodynamic problems without radiation
4	Transform electromagnetic potentials, fields, charges and currents among reference frames.
5	To be able to discuss about the solution of the wave equation and to be able to solve the advanced problems

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	5	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	5	4
P6	4	4	4	4	4
P7	4	4	4	5	4