

Course Information								
Course Code	T	P	L	C	ECTS	Type C/E	Language TR/ENG etc.	Year/Semester
FİZ2001	4	2	0	5	5	C	TR	2/FALL
Course Name (Turkish)	Elektirik ve Manyetizma							
Course Name (English)	Electricity and Magnetism							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	The student's comprehension of the events that occur as a result of the interaction of charges, The causes and consequences of the magnetic forces arising from the interaction of moving charges are comprehended by the students.
Course Outline	Electrostatic interactions, currents, interaction of moving charges, magnetic forces, Maxwell's Equations and results
Textbook/ Material/ Resources	Electricity and Magnetism (Berkeley Physics lectures Volume-2) Physics for Science and Engineering, (Serway Volume-2)
Internship Status	No

Course Precedents				
University Name	Program Name	Course Name	T-P-L-C; ECTS	Type
Ankara University	Physics	Electricity and Magnetism	4-2-0-5; 7	C
Yeditepe University	Physics	Electricity and Magnetism	3-2-0-4; 8	C
The instructor who proposed the course (Title, Name and Surname)			Signature	
Instructors who can teach the course (Title, Name and Surname)			Signature	

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)
Explanation will be made by writing on the board.

External Stakeholder Opinions About the Course (It is expected that the opinions to be obtained from the business world that will employ your graduates or from real or legal persons outside the University who have expertise on the subject of the course will be specified. Proof documents must be attached to this form.)	
Stakeholder Name	Opinion (It should be given as a summary, it should not exceed two lines.)

Weekly Course Content Distribution		
Week	Theory	Application/Laboratory
1	Electrostatics, Electric Charge, Charge Conservation, Charge Quantum, Coulomb's Law, Energy of a Charge System, Energy of a Crystal Lattice. Electric Field, Fields of Charge Distributions	
2	Electric Field Flux, Gaus's Law, Area of Global Charge Distributions, Area of Linear Charge Distribution, Area of Planar Load Layer, Problems	
3	Electric Potential, Linear Integral of Electric Field, Potential Difference and Potential Function, Gradient of a Scalar Function, Field Derivation from Potential, Potential of Charge Distribution, Potential of Linear Charge Distribution, Potential of Uniformly Charged Disk, Force Acting on Surface Charge	
4	Energy Related to Electric Field, Divergence of Vector Function, Differential Form of Gaus' Law, Laplace and Poisson's Equations, Rotational of Vector Function, Rotational in Perpendicular Coordinates, Stokes' Theorem, Problems.	
5	Electric Fields Near Conductors, Insulators and Conductors, Conductors Placed in Electric Fields, Uniqueness Theorem, Some Simple Conductor Systems	
6	Capacitors and Capacitors' Capacities, Loads and Potentials of Various Conductors, Energy Stored in a Capacitor, Different Limit Value Problems, Problems	
7	Electric Current, Charge Transport and Current Density, Stable Currents. Electrical Conductivity and Ohm's Law, Electrical Conductivity Models, When Ohm's Law Is Not Valid.	
8	Electrical Conductivity of Metals, Resistance of Conductors, Electric Current and Energy Loss, Variable Currents in Circuits Containing Resistors and Capacitors, Electromotive Force Sources, Problems	
9	Midterm Exam	
10	Fields of Moving Charges, Magnetic Forces from Oersted to Einstein, Measurement of Moving Charges, Charge Invariance, Electric Field Measurements from Different Observation Frames. Area of Point Load Moving at Constant Speed, Area of Point Load Moving from Rest to Motion or Stationary While at Motion, Force acting on Moving Load, Forces acting on Moving Loads acting on Moving Loads. Problems	
11	Magnetic Field, Definition of Magnetic Field, Some Properties of Magnetic Field, Vector Potential, Area of a Current-Carrying Wire, Area of a Current-Carrying Ring and a Coil, Area at the Center of an Infinite Solenoid,	
12	Change in B When a Current Passes from One Side to the Other of a Plate, How Fields Transform, Rowland Experiment, Electrical Conduction in Magnetic Field, Hall Effect Problems	
13	Electromagnetic Induction and Maxwell's Equations, Faraday's Discovery Motion of a Conductive Rod in a Uniform Magnetic Field, Motion of a Conductive Frame in a Non-Uniform Magnetic Field, Faraday's Law of Induction, Reciprocal Inductance Coefficient,	
14	Self-Inductance Circuits, Energy Stored in the Form of Magnetic Field, There Is a Shortage, Displacement Currents, Maxwell's Equations, Problems. Alternating Current, Resonant Circuits,	
15	Final Exam	
16		

Assessment			
Evaluation Criteria	Activity	Custom	Contribution to Success Grade (%)
	Midterm Exams	1	40
	Quizzes		
	Assignments		
	Projects		
	Term Paper		

	Laboratory		
	Other		
	Final Exam	1	60
	Sum:		100
Remarks			

Content Design and Subject Weight (%)	Mathematics and Basic Sciences	60
	Engineering Sciences	40
	Social Sciences	
	Health Sciences	
	Educational Sciences	
	Culture and Art Sciences	
	Design Information	

Workload (ECTS) Calculation			
Events	Number	Duration (Hours)	Total workload (Hours)
Fieldwork			
Midterm Exam Application	1	2	2
Self-Study (including pre-class and exam preparation)	10	1	10
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	6	84
Homework			
Final Exam Practice	1	2	2
Laboratory			
Article Review			
Writing an Article			
Reading			
Case Study			
Performance			
Problem Solution	14	2	28
Project Preparation			
Project Submission			
Quiz			
Report Preparation			
Submitting Reports			
Role/Drama Work			
Seminar			
Oral Exam			
Team/Group Work			
Argument			
Application/Practice			
Other			
TOTAL WORKLOAD:			128
ECTS CREDITS OF THE COURSE: <i>(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)</i>			5

[illegible]

1	To be able to explain the basic concepts of electricity and magnetism	5	5	5	4	3	3	4	4	4	3	3
2	Understanding of electrostatic interactions, interaction of moving charges and the events that occur as a result of these interactions	5	5	5	4	3	3	4	4	4	3	3
3	Comprehension of the causes and consequences of magnetic forces	5	5	5	4	3	3	4	4	4	3	3

Organizer: Prof. Dr. Ömer KAYGılı

Preparation Date: 20.05.2024