DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
PHY112	1			2
Title	**T**	**A**	**L**	**ECTS**
Physics II	2	1	2	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face-to-face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	This course aims to give students the basic knowledge of electromagnetism.					
Content	This course covers electrostatics (field, flux, potential, Gaussian theorem, capacity), currents (resistance, Ohm's law, Kirchhoff's rules), magnetostatics (Lorentz force, Amperes law), electrostatics and magnetostatics in the medium (dielectricity, paramagnetism), induction and alternating currents (Faraday's law of induction, resonant circuits), electromagnetic fields and Maxwell's equations					
Prerequisites	None					
Coordinator	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Elif Yunt					
Lecturer(s)	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Elif Yunt					
Assistant(s)	Dr. Anıl Can Duman Research Assist. Berat Berkan Ünal Research Assist. Yusuf Karakuş					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Physik, Lehr- und Übungsbuch, Douglas C. Giancoli, 3. erweiterte Auflage, Halliday, Physik, Wiley-VCH, 2016
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences	80	%
Engineering	10	%

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Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	10	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments		
Attendance		
Recitations	5	30
Projects		
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	4	56
Assignments	14	4	56
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	14	2	28
Projects			
Final Exam	1	2	2
		Total Work Load	**186**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Theoretical understanding of electric and magnetic fields and being able to solve practical problems will be learned.
2	Being able to model and solve problems in engineering and advanced physics applications will be learned.
3	Being able to find relations of electric and magnetic field concepts with other science disciplines and with the environment will be learned.
4	

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6	
7	
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9	
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12	
Weekly Content	
1	Electrical charge, Electrostatics
2	Coulomb's Law, Electrical Field
3	Gauss Law
4	Voltage, Electric Potential
5	Capacitors, Dielectrics
6	Electrical Current, Resistors, Ohm's Law, Electromotive Force
7	Direct Current Ciurcuits, Kirchhoff's Law
8	Magnetic Field, Magnetic Forces
9	Sources of Magnetic Field
10	Electromagnetic Induction, Faraday's Law
11	Magnetic Materials
12	Inductivity
13	Alternating current circuits (RLC)
14	Electromagnetic waves
15	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1	5	5	5	5		5	5
2	5	5	5	5		5	5
3	5	5	5	5		5	5
4							
5							
6							
7							
8							

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9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

P1 Working with modern scientific sources.
P2 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.
P3 Having theoretical and practical skills in the area of Energy Science and Technology.
P4 Having foreign language skills to follow the worldwide advancements in the field of Energy Science and Technology and to be able to discuss them with foreign colleagues.
P5 Having computational skills for research data analysis purposes.
P6 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.
P7 Having knowledge about work occupational work and safety.

Compiled by:	
Date of Compilation:	06.04.2024