DEPARTMENT OF MATERIALS 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	Materials Science and Technology					
Forms of Teaching and Learning	Face-to-face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	The students have gained knowledge and understanding of the most important phenomena of electrodynamics and optics and can explain and interpret them. They can transfer the knowledge to related phenomena and bring it into connection with everyday and current phenomena. The students are also familiar with the methods of experimental physics and relevant mathematical tools and can use them to solve scientific questions.					
Content	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. Bünyamin Ümsür					
Lecturer(s)	Assist. Prof. Dr. Gülsüm Gündoğdu Assist. Prof. Dr. Bünyamin Ümsür					
Assistant(s)	Res. Asst. Muhammed Cihat Mercan Res. Asst. Berat Berkan Ünal Res. Asst. Yusuf Karakuş Res. Asst. Fuat Berke Gül					
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

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Mathematics und Basic Sciences	80	%
Engineering	10	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	10	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz	1	10
Assignments		
Attendance		
Recitations	5	20
Projects		
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	6	84
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory	10	3	30
Projects			
Final Exam	1	3	3
		Total Work Load	**162**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Having a theoretical understanding of electric and magnetic fields and being able to solve practical problems.
2	Being able to model and solve problems in engineering and advanced physics applications.

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3	Being able to find relations of electric and magnetic field concepts with other science disciplines and with the environment.
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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	

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

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1	5	5		4		5	
2	5	5		4		5	
3	5	5		4		5	
4							
5							

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6							
7							
8							
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 Materials Science and Technology.
P4 Having foreign language skills to follow the worldwide advancements in the field of Materials 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:	Gülsüm Gündoğdu Bünyamin Ümsür
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