



**COURSE INFORMATION FORM**

Course Name	Course Code
PHYSICS II LAB	151912184

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	0	2	1	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
√				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

<b>Prerequisite(s) if any</b>	
<b>Objectives of the Course</b>	Teaching through conducting experiments on the topics related to the content of Physics II; hence, enhancing the students' perception and understanding on the important concepts and fundamental laws of electricity and magnetism.
<b>Short Course Content</b>	Numerical analysis and error calculation, fundamental measurements and Ohm's law, electrolysis, magnetic force, Ohm's law, electric field lines, Kirchoff's rules and Wheatstone Bridge, alternating current circuits, transformers.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 To enhance observational and analytical skills.	1	13	C
2 Make measurements with common instruments.	1	3	I
3 To be able to analyze quantitative information and errors.	1	15	E
4 To be able to represent experimental data by using graphics.	1	15	E
5 To be able to compare experimental results with mathematical and physical models, hence make an interpretation.	1	8	E
6 Prepare a lab report.	1	15	E
7 Develop teamwork skills..	1	12	C, E, I, K
8 Learning how to run essential measurement devices such as voltmeter, ammeter, signal generator, and oscilloscope. Comprehend the working principles of circuit components. Understanding the pivotal relationship between electricity and magnetism.	1	3	A, I
9 Encourage the curiosity for physics and improve the ability to apprehend the solid correlations between physics and engineering applications.	1	11	I
10 To obtain knowledge and experience on building basic experimental set ups upon need.	1	3, 6, 10	I

\*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

\*\*Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

<b>Main Textbook</b>	Physics II Experiments Laboratory Book, Eskişehir: Eskişehir Osmangazi Üniversitesi Yayınları, Sertaç Eroğlu, Murat Kellegöz, Gökhan Kılıç, Halil Yasin Adıyaman
<b>Supporting References</b>	Halliday, D., Resnick, R., and Walker, J. (2008). Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. Serway, R.A., Beichner, R.J., Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers
<b>Necessary Course Material</b>	

<b>Course Schedule</b>	
<b>1</b>	Introduction to laboratory, and formation of lab groups.
<b>2</b>	Electrolysis experiment.
<b>3</b>	Basic measurements and Ohm's Law Experiment.
<b>4</b>	Ohm's Law experiment
<b>5</b>	Wheatstone Bridge experiment
<b>6</b>	Equipotential and electric field lines experiment
<b>7</b>	Equipotential and electric field lines experiment
<b>8</b>	Mid-Term Exam
<b>9</b>	Magnetic force experiment
<b>10</b>	Biot-Savart Law Experiment
<b>11</b>	Transformers experiment
<b>12</b>	Resonance in Wire experiment
<b>13</b>	Resonance tube and standing waves experiment
<b>14</b>	Resonance tube and standing waves experiment
<b>15</b>	Make up experiment, general review and preparation for final exam.
<b>16,17</b>	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	2	1	2
Classroom Studying Time (review, reinforcing, prestudy,...)	2	1	2
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	10	4	40
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam	1	2	2
Studying for Final Exam	1	14	14
<b>Total workload</b>			<b>60</b>
<b>Total workload / 30</b>			<b>2</b>
<b>Course ECTS Credit</b>			<b>2</b>

Evaluation	
Activity Type	%
Mid-term	
Quiz	
Homework	
Report	50
<b>Final Exam</b>	50
<b>Total</b>	100

<b>RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)</b>		
<b>NO</b>	<b>PROGRAM OUTCOME</b>	<b>Contribution</b>
1	To possess sufficient knowledge in mathematics, science, and engineering subjects related to Metallurgical and Materials Engineering; the ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems.	5
2	The ability to identify, define, formulate, and solve complex engineering problems by selecting and applying appropriate analysis and modeling methods.	3
3	The ability to design a complex system, process, device, or product under realistic constraints and conditions to meet specific requirements by applying modern design methods.	2
4	The ability to develop, select, and use modern techniques and tools necessary for engineering applications encountered as a Metallurgical and Materials Engineer; the ability to effectively use information technology.	3
5	The ability to design experiments, conduct experiments, collect data, analyze results, and interpret findings for the investigation of engineering problems.	2
6	The ability to work effectively individually, as well as within disciplinary and interdisciplinary teams.	2
7	The ability to communicate effectively in Turkish, both verbally and in writing; knowledge of at least one foreign language.	2
8	The awareness of the necessity for lifelong learning; the ability to access information, follow developments in science and technology, and continuously renew oneself.	2
9	Awareness of professional and ethical responsibility.	2
10	Knowledge about business practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.	2
11	Knowledge about the universal and societal impacts of engineering applications on health, environment, and safety; awareness of the legal consequences of engineering solutions.	3
12	Awareness of quality consciousness and sustainability in material selection, product development, and production processes in engineering applications; awareness of quality control.	3
13	The ability to confidently approach problems encountered in engineering applications.	2

<b>LECTUTER(S)</b>			
<b>Prepared by</b>			
<b>Signature(s)</b>			

**Date:**06.06.2024