Işık University
Faculty of Arts and Sciences
Department of Physics

PHYS 104 - Physics Laboratory II

COURSE SYLLABUS

Course Name	Code	Semester	Theory (hour/week)	Application (hour/week)	Laboratory (hour/week)	Local Credits	ECTS
Physics Laboratory II	PHYS 104	Spring	**0**	0	**2**	**1**	2

Prerequisities	None

Course Language	English
Course Type	Required
Course Level	First Cycle
Course Coordinator	-
Course Lecturer(s)	-
Course Assistants	-
Course Objectives	Physics Laboratory II is a laboratory course which accompanies PHYS 102. By the end of the course, students should • devise how to experimentally test the physical laws of electricity and magnetism. • recognize how the fundamental physical laws of electricity and magnetism can be applied to various practical problems. • develop an understanding of how to report the results of scientific research. • recognize how physics is relevant to the world around them.
Course Learning Outcomes	On successful completion of this course students will be able to 1. recognize various experimental techniques in various areas of electricity and magnetism. 2. show competence in reporting the results of experimental studies. 3. be able to estimate the uncertainties in measurements. 4. be able to design simple experiments. 5. work as an effective team member. 6. develop skills for the analysis of experimental data. 7. recognize the limitations and hazards associated with scientific instruments.
Course Content	Experiments on: capacitors; DC circuits; magnetic field; Ampere's law; Faraday's law; inductance; magnetic properties of matter.

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subject
1	Lab 1. Measurements of resistance and Ohm's law
2	Lab 2. Electrical circuits with resistors connested in series and parallel
3	Lab 3. Multi-loop electrical circuits
4	Lab 4. RLC circuits
5	Lab 5. Electric fields and potentials in the parallel plate capacitor
6	Lab 6. Charging and discharging of capacitors
7	Lab 7. Dielectric constant of different materials
8	Lab 8. The transformer and power transmission
9	Lab 9. Charge to mass ratio of electron
10	Lab 10. Earth's magnetic field
11	Make-up Laboratory Sessions
12	Make-up Laboratory Sessions
13	-
14	-
15	-

TEXTBOOKS

Required Textbook(s)	Nafiye Güneç Kıyak, İsmail Karakurt, *PHYS 104 General Physics II - Electricity & Magnetism Lab*, Işık University, Department of Physics Notes.
Recommended Readings	Douglas C. Giancoli, *Physics for Scientists and Engineers with Modern Physics*, Prentice Hall, New Jersey, 2009 (4^{th} Edition).

EVALUATION SYSTEM

Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	10	-
Laboratory	10	25
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Quizzes/Studio Critics	10	-
Homework Assignments	-	-
Presentation/Jury	10	40
Project	-	-
Seminar/Workshop	-	-
Midterms/Oral Exams	-	-
Final/Oral Exam	1	35
Total	41	100

Percentage of Semester Work	40	65
Percentage of Final Work	1	35
Total	41	100

COURSE CATEGORY

ISCED GENERAL FIELD CODE	GENERAL FIELDS	ISCED MAIN AREA CODE	MAIN EDUCATIONAL AREAS	%
1	Eğitim	14	Öğretmen Yetiştirme ve Eğitim Bilimleri	0
2	Beşeri Bilimler ve Sanat	21	Sanat	0
2	Beşeri Bilimler ve Sanat	22	Beşeri Bilimler	0
3	Sosyal Bilimler, İşletme ve Hukuk	31	Sosyal ve Davranış Bilimleri	0
3	Sosyal Bilimler, İşletme ve Hukuk	32	Gazetecilik ve Enformasyon	0
3	Sosyal Bilimler, İşletme ve Hukuk	38	Hukuk	0
4	Bilim	42	Yaşam Bilimleri	0
4	**Bilim**	**44**	**Doğa Bilimleri**	**80**
4	**Bilim**	**46**	**Matematik ve İstatistik**	**10**
4	Bilim	48	Bilgisayar	0
5	**Mühendislik, Üretim ve İnşaat**	**52**	**Mühendislik**	**10**
5	Mühendislik, Üretim ve İnşaat	54	Üretim ve İşleme	0
5	Mühendislik, Üretim ve İnşaat	58	Mimarlık ve Yapı	0
6	Tarım	62	Tarım, Ormancılık, Hayvancılık ve Su Ürünleri	0
6	Tarım	64	Veterinerlik	0
7	Sağlık ve Refah	72	Sağlık	0
7	Sağlık ve Refah	76	Sosyal Hizmetler	0
8	Hizmet	81	Kişisel Hizmetler	0
8	Hizmet	84	Ulaştırma Hizmetleri	0
8	Hizmet	85	Çevre Koruma	0
8	Hizmet	86	Güvenlik Hizmetleri	0

THE RELATIONSHIP BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM OUTCOMES

Number	Program Outcomes	Level of Contribution*				
		1	2	3	4	5
1	To have a comprehension of the core areas of physics, including classical and quantum mechanics, electromagnetism, statistical and thermal physics.					X
2	To have a comprehension of basic mathematics, including differential and integral calculus, linear algebra, differential equations and complex analysis.			X		
3	To have a comprehension of computer programming and chemistry.					
4	To have a comprehension of the importance and practice of good ethical standards.					X
5	To have a recognition of contemporary issues in science and its applications.			X		
6	To have an ability to construct theoretical models, solve problems, design and conduct experiments, as well as to analyze and interpret data.					X
7	To have an ability to demonstrate their understanding of at least one advanced topic in theoretical or experimental physics.					
8	To have an ability to function on multi-disciplinary teams					X
9	To have an ability to effectively communicate information in both written and verbal form					X
10	To have a recognition of the need for and an ability to engage in life-long learning.			X		
11	To have an ability to use modern physics techniques, skills, and computing tools necessary for physics practice (use laboratory and workshop equipment to generate data, prepare technical drawings, prepare technical reports, give technical presentations, take notes effectively, write computer programs, use mathematics and/or computational tools and packages to make models) .					X

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

Contribution of Course Learning Outcomes to Program Outcomes	The class contributes to the student development in terms of building a solid foundation of experimental techniques in various areas of electricity and magnetism. Students should develop problem solving abilities and enhance critical thinking and improve their written and oral communication skills.

ECTS / WORKLOAD TABLE

Activities	Number	Duration (Hour)	Workload (Hour)
Course Hours (Including Exam Week: 16 x Total Hours)	-	-	-
Laboratory	10	2	20
Application	-	-	-
Special Course Internship (Work Placement)	-	-	-
Field Work	-	-	-
Study Hours Out of Class	10	0.8	8
Presentations / Seminar	10	2	20
Project	-	-	-
Homework Assignments	-	-	-
Quizzes			
Midterms / Oral Exams			
Final / Oral Exam	1	2	2
		Total Workload	**50**
		Total Workload/25	**2**