

Işık University
Faculty of Arts and Sciences
Department of Physics

PHYS 103 - Physics Laboratory I

COURSE SYLLABUS

Course Name	Code	Semester	Theory (hour/week)	Application (hour/week)	Laboratory (hour/week)	Local Credits	ECTS
Physics Laboratory I	PHYS 103	Fall	0	0	2	1	2

Prerequisites	None
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Course Language	English
Course Type	Required
Course Level	First Cycle
Course Coordinator	-
Course Lecturer(s)	-
Course Assistants	-
Course Objectives	<p>This is a laboratory course which accompanies PHYS 101. By the end of the course, students should</p> <ul style="list-style-type: none"> • devise how to experimentally test the physical laws of mechanics. • recognize how the fundamental physical laws of mechanics 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	<p>On successful completion of this course students will be able to</p> <ol style="list-style-type: none"> 1. recognize various experimental techniques in various areas of mechanics. 2. show competence in reporting the results of experimental studies. 3. estimate the uncertainties in measurements. 4. 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: work and energy; dynamics of system of particles; conservation of energy and momentum, collisions; rotational kinematics and dynamics; equilibrium of rigid bodies; oscillations.

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subject
1	Lab 1. Measurements and Error Analysis.
2	Lab 2. Error Estimation and Graphical Analysis
3	Lab 3. Free Fall Acceleration or The Period of a Simple Pendulum
4	Lab 4. Projectile Motion
5	Lab 5. Static and Kinetic Frictional Forces
6	Lab 6. Hooke's Law and Work Done by a Variable Force
7	Lab 7. Conservation of Mechanical Energy
8	Lab 8. Moments of Inertia of Different Bodies
9	Lab 9. Laws of Collision
10	Lab 10. Velocity of Sound in Air
11	Lab 11. Drag Force or Ideal Gas Law
12	Make-up Laboratory Sessions
13	Make-up Laboratory Sessions
14	-
15	-

TEXTBOOKS

Required Textbook(s)	Nafiye Güneç Kıyak, İsmail Karakurt, <i>PHYS 103 General Physics I - Mechanics Lab</i> , Işık University, Department of Physics Notes.
Recommended Readings	Douglas C. Giancoli, <i>Physics for Scientists and Engineers with Modern Physics</i> , Prentice Hall, New Jersey, 2009 (4 th Edition).

EVALUATION SYSTEM

Semester Requirements	Number	Percentage of Grade
Attendance/Participation	11	-
Laboratory	11	25
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Quizzes/Studio Critics	11	-
Homework Assignments	-	-
Presentation/Jury	11	40
Project	-	-
Seminar/Workshop	-	-
Midterms/Oral Exams	-	-
Final/Oral Exam	1	35
Total	45	100

Percentage of Semester Work	44	65
Percentage of Final Work	1	35
Total	45	100

COURSE CATEGORY

ISCED GENERAL FIELD CODE	GENERAL FIELDS	ISCED MAIN AREA CODE	MAIN EDUCATIONAL AREAS	%
1	Eđitim	14	Öđretmen Yetiřtirme ve Eđitim Bilimleri	0
2	Beřeri Bilimler ve Sanat	21	Sanat	0
2	Beřeri Bilimler ve Sanat	22	Beřeri Bilimler	0
3	Sosyal Bilimler, İřletme ve Hukuk	31	Sosyal ve Davranıř Bilimleri	0
3	Sosyal Bilimler, İřletme ve Hukuk	32	Gazetecilik ve Enformasyon	0
3	Sosyal Bilimler, İřletme ve Hukuk	38	Hukuk	0
4	Bilim	42	Yařam Bilimleri	0
4	Bilim	44	Doęa Bilimleri	80
4	Bilim	46	Matematik ve İstatistik	10
4	Bilim	48	Bilgisayar	0
5	Mühendislik, Üretim ve İnřaat	52	Mühendislik	10
5	Mühendislik, Üretim ve İnřaat	54	Üretim ve İřleme	0
5	Mühendislik, Üretim ve İnřaat	58	Mimarlık ve Yapı	0
6	Tarım	62	Tarım, Ormancılık, Hayvancılık ve Su Ürünleri	0
6	Tarım	64	Veterinerlik	0
7	Saęlık ve Refah	72	Saęlık	0
7	Saęlık ve Refah	76	Sosyal Hizmetler	0
8	Hizmet	81	Kiřisel Hizmetler	0
8	Hizmet	84	Ulařtırma 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

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

Activities	Number	Duration (Hour)	Workload (Hour)
Course Hours (Including Exam Week: 16 x Total Hours)	-	-	-
Laboratory	11	2	22
Application	-	-	-
Special Course Internship (Work Placement)	-	-	-
Field Work	-	-	-
Study Hours Out of Class	12	0.3	4
Presentations / Seminar	11	2	22
Project	-	-	-
Homework Assignments	-	-	-
Quizzes			
Midterms / Oral Exams			
Final / Oral Exam	1	2	2
		Total Workload	50
		Total Workload/25	2