

Işık University
Faculty of Arts and Sciences
Department of Physics

PHYS 203 - General Physics III

COURSE SYLLABUS

Course Name	Code	Semester	Theory (hour/week)	Application (hour/week)	Laboratory (hour/week)	Local Credits	ECTS
General Physics III	PHYS 203	Fall	3	0	2	4	7

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 an introductory physics course that covers the fundamental physical laws involving gravitation, wave phenomena, fluid mechanics, thermodynamics and electromagnetism. It complements PHYS 101 and PHYS 102. By the end of the course, students should</p> <ul style="list-style-type: none"> • demonstrate a knowledge of the fundamental physical laws involving gravitation, wave phenomena, fluid mechanics, thermodynamics and electromagnetism. • apply these fundamental physical laws to solve various practical problems. • 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. demonstrate a conceptual understanding of the fundamental physical laws involving gravitation, wave phenomena, fluid mechanics, and thermodynamics. 2. recognize how the fundamental physical laws can be applied to solve a variety of problems. 3. analyze the properties of gasses from the point of view of kinetic theory. 4. make a distinction between the concepts of heat and temperature. 5. devise how the concept of entropy arises from the laws of thermodynamics. 6. describe Maxwell's equations and electromagnetic waves. 7. explain laws of reflection, refraction, interference, diffraction and polarization. 8. discuss how physics is relevant to the world around them.
Course Content	Oscillations, gravitation, fluid mechanics, wave phenomena, temperature and thermodynamics, traveling waves, principle of superposition, modulations, pulses and wave packets, electromagnetic waves, reflection, refraction, interference, diffraction and polarization, interferometry.

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subject
1	Gravitation
2	Gravitation, fluid mechanics
3	Fluid mechanics
4	Oscillations
5	Wave motion
6	Sound waves
7	Temperature and the ideal gas law
8	Kinetic theory of gases
9	Heat and the first law of thermodynamics
10	Second law of thermodynamics
11	Heat engines
12	Maxwell's equations and electromagnetic waves
13	Light: Reflection and refraction
14	Light: Interference
15	Light: Diffraction, polarization

TEXTBOOKS

Required Textbook(s)	Douglas C. Giancoli, <i>Physics for Scientists and Engineers with Modern Physics</i> , Prentice Hall, New Jersey, 2009 (4 th Edition).
Recommended Readings	<ul style="list-style-type: none">• P.M. Fishbane, S.G. Gasiorowicz & S.T. Thornton, <i>Physics for Scientists and Engineers with Modern Physics</i>, 3rd Edition, 2005, Pearson Prentice Hall.• Feynman, R.P., Leighton, R.B., Sands, M. <i>The Feynman Lectures on Physics, Volume I, II</i>, Addison Wesley, 1966.

EVALUATION SYSTEM

Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Quizzes/Studio Critics	4	8
Homework Assignments	10	14
Presentation/Jury	-	-
Project	-	-
Seminar/Workshop	-	-
Midterms/Oral Exams	2	52
Final/Oral Exam	1	26
Total	16	100

Percentage of Semester Work	15	74
Percentage of Final Work	1	26
Total	16	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	75
4	Bilim	46	Matematik ve İstatistik	15
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.			X		
8	To have an ability to function on multi-disciplinary teams					
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) .					

*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 developing a sound knowledge and understanding of important laws and principles involving gravitation, wave phenomena, thermodynamics and electromagnetism, and demonstrate competence in the application of these principles to more diverse areas of physics and to other disciplines. Students should develop problem solving abilities and enhance critical thinking and improve their written communication skills.
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ECTS / WORKLOAD TABLE

Activities	Number	Duration (Hour)	Workload (Hour)
Course Hours (Including Exam Week: 16 x Total Hours)	15	3	45
Laboratory	-	-	-
Application	-	-	-
Special Course Internship (Work Placement)	-	-	-
Field Work	-	-	-
Study Hours Out of Class	15	3	45
Presentations / Seminar	-	-	-
Project	-	-	-
Homework Assignments	10	4	40
Quizzes	5	2	10
Midterms / Oral Exams	2	10	20
Final / Oral Exam	1	15	15
		Total Workload	175
		Total Workload/25	7