ECTS COURSE INFORMATION FORM

Faculty	**Faculty of Engineering**	
Program	**B.Sc. in Civil Engineering**	**Required**
	B.Sc. in Computer Engineering	**Required**
	B.Sc. in Electrical-Electronics Engineering	**Required**
	B.Sc. in Industrial Engineering	**Required**
	B.Sc. in Mechanical Engineering	**Required**

Course Code	PHY103L			
Course Title in English	Physics I Laboratory			
Course Title in Turkish	Fizik I Laboratuvarı			
Language of Instruction	English			
Type of Course	Laboratory			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	100%	-	-	-
Semester Offered	Fall			
Contact Hours per Week	Lecture: -	Recitation: -	Lab: 2 hours	Other: -
Estimated Student Workload	40 hours			
Number of Credits	2 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	None			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To acquire a solid understanding of the subjects and concepts including the description of motion, Newton's Laws, conservation principles (energy and momentum) and dynamics of rotation covered in the related Physics I course through hands-on experiments in laboratory.			
Course Description	This laboratory course includes the experiments related to mechanics. The laboratory experiments covered in this course are based on the measurement of time, period and force using proper tools. These measurements are used in order to determine the speed, velocity, acceleration and period of the objects in motion. With the help of physics laws, some physical quantities are determined following these measurements compared with those obtained from theoretical approaches.			
Course Description in Turkish	Bu laboratuvar dersi mekanik deneylerini içermektedir. Laboratuvarda yer alan deneyler zaman, periyot, kuvvet ölçümleri temellinde olup, bu ölçümler ve fizik yasaları kullanılarak hareket eden cisimlerin, hızı, momentumu, ivmesi ve erişim mesafesi gibi büyüklükler hesaplanacaktır. Hesaplanan bu nicelikler yardımıyla, bazı fiziksel parametreler deneysel olarak belirlenecek ve teori ile karşılaştırılacaktır.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: 1. analyze motion using displacement, velocity and acceleration; 2. apply Newton's laws of motion; 3. apply kinetic and potential energy, and energy conservation; 4. analyze momentum in collisions; 5. analyze circular motion and rigid body rotation; 6. collect data using a variety of equipment, record and organize data in tables and graphs, interpret data while addressing uncertainties, and draw conclusions; 7. demonstrate awareness to work safely in laboratory environment.			

Relationship of the Course with the Student Outcomes	Level	Learning Outcomes	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1,2,3,4,5	Final Exam
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors			
(3) an ability to communicate effectively with a range of audiences			
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	S	7	Safety Exam
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	H	6	Lab Reports
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies			

Prepared by and Date	Prof. Dr. Ahmet Giz / June 2019	
Name of Instructor	Prof. Dr. Ahmet Giz	
Course Contents	Week	Topic
	1.	Measurement and Error Handling
	2.	Introduction to Physics Laboratory
	3.	Basic Measurements
	4.	Newton’s Laws
	5.	Inclined Plane
	6.	Projectile Motion
	7.	Conservation of Momentum in Collisions
	8.	Centripetal Force
	9.	Basic Pendulum
	10.	Hooke’s Law
	11.	Young’s Modulus
	12.	Moment of Inertia and Angular Motion of a Rotating Flat Disk
	13.	Rolling Objects
	14.	Discussions
	15.	Final Exam/Project/Presentation Period
	16.	Final Exam/Project/Presentation Period
Required/Recommended Readings	Physic 103L Experiments Sheets (will be given by instructor) Sears & Zemansky's University Physics, Hugh D. Young, Roger A. Freedman, Vol.1, 13th Edition, Addison-Wesley, 2011	
Teaching Methods	Students should come to the laboratory as reading their experiments beforehand. They will perform the experiment by the help of the instructor. They are obligated to bring their lab. sheets and get it signed by the instructor at the end of the lab. They will graph their results in situ.	
Homework and Projects	No homework provided in this course	
Laboratory Work	Yes	

Computer Use	Calculator and ruler are required. Drawing their graphs with excel is suggested if the students bring notebook computer.
Other Activities	Students should know the concepts related with their experiments to be performed
Assessment Methods	The assessment of this course will include: 5 % Physics Laboratory Safety Rules Quiz 10% Final Exam 85 % Reports of Experiments • Graphs (40 points) • Experimental Data (30 points) • Results (15 points) + 15 points (if you choose your own sentences) if there is no graph in the experiment, 20 points are added to other parts. 10% contribution will be made to the students who want to design their own experiments at the end of the semester. Experiments should be applicable and relevant to the course content.
Course Administration	Each student taking the course will take the quiz about the Physics Laboratory Safety Rules. Mechanical Physics Laboratory course will start with the "basic measurements" experiment. Before each experiment, the students will be tested orally about the experiment. Students who do not do the necessary work will not be admitted to the class. The students will do this experiment at the make-up week. The student who completed the experiment must upload the relevant part to the black board before coming to the next experiment. In order to be able to make experiments during the make-up weeks, the student must have reached 8 (eight) experiments during the semester. Students who do not participate in 4 (four) experiments will fail the course. Students can carry out a maximum of 5 (five) experiments in the make-up week. The Students must complete at least 10(ten) experiments with make-up experiments in order to achieve attendance condition. The students are expected to pursue in this class with honesty and integrity. Disciplinary action will be pursued in all instances if academic dishonesty and cheating has occurred. Students with disabilities should consult the instructor for their special needs. For any question, please consult the instructor via mail or phone.

ECTS Student Workload Estimation

Activity	No/Weeks	Hours			Calculation	Explanation
	No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
Lectures	10	1	1.5	0.5	30	A*(B+C+D)
Problem Sessions					0	A*(B+C+D)
Quizzes					0	A*(B+C+D)
Midterm(s)					0	A*(B+C+D)
Final Examination	1	8	2	0	10	A*(B+C+D)
Total Workload					40	
Total Workload/25					1.6	
ECTS					2	