ECTS COURSE INFORMATION FORM

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

Course Code	PHY103			
Course Title in English	Physics 1			
Course Title in Turkish	Fizik 1			
Language of Instruction	English			
Type of Course	Lecture/Practical/Interactive Online Work/Laboratory Work			
Level of Course	Undergraduate Introductory			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	%100			
Semester	Fall			
Contact Hours per Week	Lecture: 3 hours	Recitation:	Lab: 0	Other:
Estimated Student Workload	153 hours per semester.			
Number of Credits	6 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	None			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	The objective of this course is to provide the students the fundamental principles of physics where they can use in engineering applications. The first few chapters of this course recalls high school physics with more scientific notation. However, this course is also materialized with new subjects to provide the students the necessary basis for their future engineering classes. Having completed this course, students will be able to establish a cross reference between the fundamental physics laws and the real-world applications.			
Course Description	This course includes the topics mostly related with mechanics part of fundamental physics. These topics are; significant figures, units and unit analysis, vectors, motion in one dimension, motion in multi dimensions, Newton's Laws and their applications, work and kinetic energy, potential energy and conservation of energy, momentum and conservation of momentum, rotation of rigid bodies and dynamics of rotational motion.			
Course Description in Turkish	Bu kurs, genel anlamda temel fiziğin mekanik konularını içermektedir. Bu konular; anlamlı sayılar, birimler ve birim analizi, vektörler, tek boyutlu hareket, çok boyutlu hareket, Newton'un yasaları ve uygulamaları, iş ve kinetik enerji, enerjinin korunumu, momentum ve momentumun korunumu, katı cisimlerin dönmesi, dönme dinamiğidir.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: 1. examine the physics results by unit analysis; 2. understand the basic operations with vectors (scalar and vector products); 3. understand the kinematics in multi dimensions and direct applications of Newton's laws to solve the fundamental physics problems; 4. recognize concept of energy, momentum, impulse and conservation laws; 5. know kinetics and dynamics of rotation around a single axis; 6. know the principals involved in free and forced oscillations; 7. demonstrate ability to function as a team member.			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	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	1,2,3,4,5,6	Quizzes, Exams, HW, Flip Activities
(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			
(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	S	7	Weakest link in HW and Quiz
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
(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	
Semester	Fall 2019-2020	
Name of Instructor	Prof. Dr. Ahmet Giz	
Course Contents	Week	Topic
	1.	Fundamental quantities, significant figures, units and unit analysis
	2.	Vectors: Vector algebra, scalar product, vector product, Static Equilibrium
	3.	Motion in 1, 2 and 3 dimensions: Projectile motion and uniform circular motion
	4.	Newton's first, second and third laws
	5.	Application of Newton laws: Friction and uniform circular motion
	6.	Work and Kinetic Energy: Work, work-energy theorem and power
	7.	Potential energy and conservation of energy: Conservative and non-conservative forces
	8.	Momentum and motion of system of particle: Center of mass, motion of the center of mass
	9.	Momentum and conservation of momentum
	10.	Rotational kinematics: Angular position, angular velocity, angular acceleration, moment of inertia
	11	Rotational dynamics: Torque, work and kinetic energy for rotating bodies
	12.	Rotational dynamics: Angular momentum, conservation of angular momentum
	13.	Free vibrations of simple systems
	14.	Forced vibrations and resonance
	15.	Final Exam/Project/Presentation Period
	16.	Final Exam/Project/Presentation Period
Required/Recommended Readings	Textbook is: Sears & Zemansky's University Physics Mastering Physics with eText -- Access Card Package http://wps.aw.com/aw_young_physics_11/13/3510/898586.cw/index.html	
Teaching Methods	Students should watch the lecture videos and course summaries posted in the blackboard system before they come to the classroom. The lecture contents are also posted in the blackboard system. The lectures are conventional lectures with instructor dominated.	

	Example problems will be mostly solved by students. The interaction with the students (questions and answers) will be maximized as much as possible.
Homework and Projects	There are mandatory homework assignments through Pearson system
Laboratory Work	It is a separate class now (103L).
Computer Use	N/A
Other Activities	Random quizzes will take place. We will have at least 10 quizzes.
Assessment Methods	The assessment of this course will include: 3 X 25%= 75 % midterms (Four midterms) 15% Homework 10% quizzes 10% Flip Activities (Solving example problems on the Board. This is a bonus as it is not physically possible to get everyone solve examples) Types of assessment: Midterm: Number 3, Ratio (%) 75 Homework: Number 10-12, Ratio (%) 15 Quiz: Number 12-15, Ratio (%) 10 Total: 100 Bonus Credits: Oral Contributions: Number 2, Ratio (%) 10 Weakest Link*: Ratio (%) 5 • The students will be divided into groups of 4. Up to 5 points will be assigned to all group members depending on the quiz and HW performance of the weakest member of the group. This is to encourage team work among group members.
Course Administration	Students are expected to attend 70% of the classes. There is no make-up for missed classes. One make-up exam will be given at the end of the semester for those who miss an exam due to a legitimate excuse accepted by the instructor. 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

	No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
Lectures	14	2	3	1	84	A*(B+C+D)
Quizzes	10	0.5	0	0	5	A*(B+C+D)
HW	10		2		20	A*(B+C+D)
Midterm(s)	4	8	2	1	44	A*(B+C+D)
Total Workload					153	
Total Workload/25					6.12	
ECTS					6	