1. COURSE DESCRIPTION

Course Code: PHYS 1001 (3 2) (4)  
Course Name: Physics I  

Course Objectives: This is the first part of the two part introductory physics courses which has been offered to the freshman students at BAHÇEŞEHİR UNIVERSITY. This introductory physics course has two main objectives: first of them to provide the student with a clear and logical presentation of the basic concepts and principles of physics. The second is to strengthen an understanding of the concepts and principles through a broad range of interesting applications to the real world. To meet these objectives, we have placed emphasis on sound physical arguments and problem-solving methodology. We have attempted to solve problems, which have practical applications to show students the role of physics in the other disciplines like engineering, chemistry, biology. Also this course is a backbone of some of the courses at the upper level classes.

Prerequisites: None  
Special Requirements: None  

Instructors:  
1) Assoc. Prof. Lütfi ARDA,  
Office: Faculty of Eng.&N.Sci. 2nd floor  
E-mail: lutfi.arda@eng.bahcesehir.edu.tr  

2) Assoc. Prof. Muhammed AÇIKGÖZ,  
Office: Faculty of Eng.&N.Sci. 2nd floor  
E-mail: macikgoz@eng.bahcesehir.edu.tr  

3) Assoc. Prof. Sarper ÖZHARAR,  
Office: Faculty of Eng.&N.Sci. 2nd floor  
E-mail: sarper.ozharar@eng.bahcesehir.edu.tr  

4) Asst. Prof. Ömer POLAT,  
Office: Faculty of Eng.&N.Sci. 2nd floor  
E-mail: omer.polat@eng.bahcesehir.edu.tr  

Assistants:  
1) Asst. Doğan AKCAN  
E-mail: dogan.akcan@eng.bahcesehir.edu.tr  

2) Asst. Mahmut AĞAN  
E-mail: mahmut.agan@eng.bahcesehir.edu.tr  

The offices of all Physics Lab. Assistants are located at the ground floor of Faculty of Eng.&N.Sci. Phys. Lab.

Office Hours: Look at the weekly program of the individual instructor on his/her office door  

Textbook: 1) electronic version of Young&Freedman’s University Physics13 edition found at masteringphysics.com  

Lab. Book: Physics – I (Classical Mechanics) Bahçeşehir University Publications. To obtain this book please consult with lab. teaching assistant  

NOTE: The Class notes can be purchased from the photocopy center…

References and Other Materials:  
II. COURSE CONTENTS

Weeks 1,2 1. Units, Physical Quantities and Vectors, Ch. 1,
Introduction, Standards, mass, time, length, density and atomic mass, dimensional analysis, conversion of units. Vector and Scalar quantities, addition of vectors, substraction of vectors, component of a vector, unit vectors-analytic method.

Weeks 3,4 2. Motion along a straight line, Ch 2,
Introduction, speed, position vector, displacement vector, average velocity, Instantaneous velocity, Acceleration, One-Dimensional Motion with constant acceleration, Freely Falling Objects.

Weeks 4,5 3. Motion in Two or Three Dimensions, Ch 3,
The displacement, velocity and vectors, two-dimensional motion with constant acceleration, projectile motion, uniform circular motion, relative velocity and acceleration.

Weeks 6,7 4. Newton’s Laws of Motion Ch 4,
Introduction, Newton’s First Law and Inertial Frames, Newton’s second Law, Force and Mass, Weight, Newton’s Third Law, Forces of Friction, Some Application of Newton’s Law

Week 8 5. Applying Newton’s Laws, Ch 5,
Newton’s Second Law Applied to Uniform Circular Motion, Non-Uniform circular motion, Fictitious Force in a Rotating System, Motion in the Presence of Resistive Forces.

Weeks 9,10 6. Work and Kinetic Energy , Ch 6,
Work Done by a Constant Force, Work Done by a varying Force, Kinetic Energy, and Work-energy Theorem, Power, Relativistic Kinetic Energy

Weeks 11,12 7. Potential Energy and Energy Conservation, Ch. 7,

Weeks 13, 14 8. Momentum, Impulse and Collisions, Ch. 8,
Linear Momentum and its Conservation, Impulse and Momentum, Collision in One and Two Dimension, Center of Mass, Motion of a System of Particles, Rocket Propulsion

III. LABORATORY EXPERIMENTS, TUTORIALS, AND OTHER ACTIVITIES

Information about laboratory will be given in the 1st Laboratory session (orientation meeting). Please consult with your assistant for orientation program. The students, who repeat PHYS 1001 Physics I, should see their assistant to be eligible for exemption from laboratory work.

IV. EXAM DATES, GRADING POLICY AND ATTENDANCE

Midterm Exam: You will be given 1 (one) mid-term exam during the semester. Its date will be announced later during the semester.

Final Exam: You will be given 1 final exam; the date of which will be arranged during the semester.

Mid–Term exam: 35%, Lab Grade: 15%, Final Exam: 50%. Online Homeworks: 5%,

Total points are: 105%

Evaluation of the lab grade is explained in the fall semester work plan table.

Online Homeworks: will be given through itslearning system. The total number of homeworks may change, but their total contribution to the semester grade will be 5% as BONUS. In order to complete and submit the homeworks, you have to have access to the itslearning system.
**Make-up Exams:** All make-up exams will be given in the last two days of the last week of the semester. Please consult to your instructor and assistants for any problem with your courses. You must submit your excuse letter or medical report to your Department Head 5 days after it’s expired. We suggest you to take exams on time. All make-up exams are given last week. Because of many exams in short time in general students do not be successful.

**IMPORTANT NOTE**

This course, PHYS 1001 Physics I (3 2) is arranged as 3 theoretical lecture hours and 2 laboratory/problem solution hours. At the beginning we will meet five hours weekly in the class. Please don’t miss any class meeting hours. Later we will arrange the class meeting, problem solution and laboratory hours.

If you fail this course you have to repeat the whole course (lecture + laboratory) over again. NO EXCEPTION!

**ALL ANNOUNCEMENTS CAN BE FOUND IN THE PHYSICS GROUP WEBPAGE:**

physics.bahcesehir.edu.tr

The Instructors have the right to make changes on this syllabus, if a change is applied, it will be announced to the students in 24 hour.

**INSTRUCTORS OF THE CLASS PHYS 1001 AT THE 2015-2016 ACADEMIC YEAR FIRST SEMESTER**

Assoc. Prof. Dr. Lütfi ARDA  
Assoc. Prof. Dr. Muhammed AÇIKGÖZ  
Assoc. Prof. Dr. Sarper ÖZHARAR  
Asst. Prof. Ömer POLAT  
Asst. Doğan AKCAN  
Asst. Mahmut AĞAN