PHYS 0174: Physics for Science and Engineering 1

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course website and announced in class)

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Office Hours: Mondays 16:30 -18:30am; for meetings at other times please make appointments in advance

Lecture Times:

Section	Monday	Thursday
1	13:00-14:35, Rm 4-212 14:45-16:25, Rm 4-212	--
2	8:15-9:55, Rm 3-101	10:15-11:55, Rm 3-101
3	10:15-11:55, Rm 3-101	8:15-9:55, Rm 3-101

Teaching Assistants:

TBA
TBA

Catalog Description: 4 Credits; As the first part of a two-semester introduction to general physics, this course introduces students to the basic principles of classical Newtonian mechanics and gravitation. Topics covered include motion in 1-, 2-, and 3-dimensions, Newton's Laws, work and energy, rotational motion, momentum, gravitation, fluid mechanics, harmonic motion and thermodynamics.

Required Text:

Course Objective: The goal of this course is to give you an introductory overview of the subject of physics, starting from the description of the fundamental quantities such as time, distance, and mass, and to progress through the description of nature using Newtonian mechanics and its

application to gravity. Strong mathematical skills are needed to test your understanding of the models and theories that you will be introduced to.

As the semester progresses you will learn to apply knowledge of mathematics, science, and engineering that requires to:

Be familiar with the basic concepts and methods physicists use to analyze the world. Interpret the different units and scales of measurable quantities.
Convert units of mechanical quantities
Make use vectors to describe and analyze motion
Describe and analyze motion with constant acceleration
Apply differential calculus to the analysis of motion
Analyze simple situations and explain them to other people. Make use of motion diagrams
Acquire a thorough understanding of the concept of force Apply newton's laws to simple physical systems
Apply the principle of conservation of energy to mechanical systems
Interrelate the concepts of physical work, forces, potential, and kinetic energy Apply the principle of conservation of linear momentum
Apply concepts such as torque and angular momentum to rotation of rigid bodies Apply newton's law of gravitation to planetary motion
Assimilate new material and apply it to analyze different situations

Course Outline:

Part 1:

Measurement (Ch. 1)
Motion along a Straight Line (Ch. 2)
Vectors (Ch. 3)
Motion in Two and Three Dimensions (Ch. 4)
Force and Motion (Ch. 5-6)

Part 2:

Energy and Work (Ch. 7-8)
Linear Momentum (Ch. 9)
Rotation (Ch. 10)
Angular Momentum (Ch. 11)
Equilibrium and Elasticity (Ch. 12)

Part 3:

Gravitation (Ch. 13)
Fluids (Ch. 14)
Oscillations (Ch. 15)
Waves (Ch. 16-17)
Thermodynamics (Ch. 18-20)

Examination Schedule:

Midterm Exam on Monday May 07, 2018
Final Exam on Thursday June 21, 2018

Midterm Exam will be taken during normal lecture times (60 mins); Final Exam will take 60 mins.

Course Grading:

3 Homeworks	3x15= 45%
Midterm	25%
Final	30%

Late homework's policy: the deadlines are strict and maximum 1 late homework per semester can be accepted with reduced grade: 90% if submitted within a week after the deadline, 80% if within two weeks, 60% if within a month, 40% if within two months, 0 otherwise. Zero grade for any second /third late homework.

Homework is to be submitted in class at the beginning of lecture on the assigned due date. Show all work and clearly mark answers. Late Homework will receive no credit.

Grading Scale: A 10-point scale will be used as a baseline for final grades (A, A- > 90, 89 > B+, B, B- >80, etc.). An additional curve may be applied, as determined by the overall final grade distribution of the class. Grades of A-, B+, B-, etc. will be determined at the instructor's discretion.

Course Schedule (may be adjusted/modified):

Week	Lecture 1	Lecture 2	Required reading
1	Course Introduction- Measurements	Motion along a Straight Line	Ch 1 and 2
Week 2	Vectors	Motion in 2- and 3- Dimensions	Ch 4

Week 3	Motion in 2- and 3-Dimensions	Force and Motion	Ch 5
Week 4	Force and Motion	Force and Motion	Ch 6
Week 5	**Kinetic Energy and Work**	Kinetic Energy and Work	Ch7

Week 6	Lecture 1	Lecture 2	Reading
Week 7	**Potential and Conservation of energy**	**Potential and Conservation of Energy**	Ch 8
Week 8	Potential and Conservation of Energy	Linear Momentum	Ch 8 and 9
Week 9			
Week 10	Linear Momentum	Linear Momentum	**Ch 9**
Week 11	Rotation	Rotation	Ch 10
Week 12	**Angular Momentum**	Angular Momentum	Ch 11
Week 13	Equilibrium and Elasticity	Equilibrium and Elasticity	Ch 12
Week 14	**Gravitation**	Gravitation	Ch 13
Week 15	Gravitation/Fluids	Fluids	Ch 14
Week 16	**Fluids**	**Oscillations**	**Ch 14, 15**
Week 17	Oscillations	Waves	Ch 15, 16
Week 18	Waves	Waves	Ch 17

Class Policies:

Regular class attendance is expected and encouraged. Each student is responsible for all of the material presented in class and in the reading assignments. Exams will emphasize treatment of material covered in lectures.

In general, no late assignments will be accepted or makeup exams given. Exceptions will be made for a valid excuse consistent with University Policy. If you cannot attend an exam or meet a due date, you must contact the instructor prior to the exam or due date. Arrangements will be made for students on a case by case basis. (Failure to contact the instructor prior to the exam or assignment due date will result in a zero on that exam/assignment.)

Academic Integrity Policy:

"Violations of academic integrity include, but are not limited to, *cheating, plagiarism, or misrepresentation in oral or written form*. Such violations will be dealt with severely, in accordance with University policy. Plagiarism means representing someone else's idea or writing as if it were your own. If you use someone else's ideas or writing, be sure the source is clearly designated." It is expected that students adhere to the academic integrity policy that is presented in the Student's Honor Code of Conduct / Student Handbook.

Disability Services:

Any personal learning accommodation that may be needed by the student to be successful in this course must be told to the instructor immediately in order to assure compliance and accommodation. Audio or video recording (or any other form of recording) of classes is not permitted unless expressly allowed by the instructor as a special accommodation for students who are currently registered with the Disability Resource Services Program and are approved for this accommodation. Recordings allowed as special accommodations are for the personal use of the DRS-approved student, and may only be distributed to other persons who have been approved by the DRS program. The instructor may require the student to sign an Audio/Video Recording Agreement, which they may keep for their records.