**PHYS 193: College Physics I**

**Fall 2009**

**Montclair State University**

**Course Description**

Some of the deepest questions that have intrigued humans for centuries are concerned with the nature of the physical universe we live in. What is its shape, size, composition? These are deep questions and one does not necessarily have answers. But we keep searching, and with different kinds of tools, philosophy, science, religion etc. In this course we will develop some of the fundamental scientific tools needed to explore these questions and occasionally talk about some answers that have been provided by famous scientists. I am sure you will enjoy exploring the meaning of life from the point of view of a physicist.

More specifically we will study of the principles of physics and some applications to society's problems. Topics covered will include mechanics, thermodynamics, fluids, and harmonic motion.

**Text Book**

Essentials of College Physics (1st Ed.) by Serway/Vuille

**Times**

MW: 10am-11:15am (Lecture)

Thursday (Lab)

**Contact Information**

Instructor: Professor Ashwin Vaidya

Email: vaidyaa@mail.montclair.edu (Please state ‘PHYS193” in the subject box of the email)

Office: RI-245

Office Hours: M: 1pm:3pm, W: 1pm-2pm or by appointment.

**Biographical Paper (group project)**

One project you will do in this course will be to write a 5 page biographical paper about a physicist. This is a group project and will be done with your lab team. Some reading materials will be provided to you and you are free to use library and internet facilities to do more research.

**Final Presentation (group project)**

The class will give a final presentation based on a project that they do for the class. The project will be done team-wise and presented during finals week (lab finals). We will discuss possible topics for the project during the semester. Please feel free to make suggestions. We will also discuss possible format for the presentation in due course.

**Grade**

The final grade is based on the performance on 2 Tests (2 X 100=200 pts), Homeworks (5 X 80 = 400pts), Final Exam (200pts) and Lab work, 3 page biographical paper and final lab project presentation (100+50+50=200pts). The grade assignment will be according to the following scheme:

A-, A: 900-1000pts

B,B+:800-900pts

C,C+,B-:650-800pts

D,C-: 600-650pts

F: Less than 600pts

**Tentative Schedule of Topics(# of sessions)**

* Introduction to the course, physics and modeling (1)
* Motion in one dimension.(2-3)
* Circular motion (1)
* Introduction to vectors (2)
* Two-dimensional motion (3).
* **Test 1**
* Laws of motion (3).
* Circular motion (3)
* Work and Energy (3)
* Conservation of energy (1).
* Momentum (2)
* Collisions (1)
* **Test 2**
* Temperature and basics of thermal physics(2)
* Laws of Thermodynamics (2)
* **FINAL EXAM-LAB PRESENTATION**

**Useful Links**

* Algebra notes: <http://tutorial.math.lamar.edu/Classes/Alg/Alg.aspx>
* Algebra/Trig Review: <http://tutorial.math.lamar.edu/Extras/AlgebraTrigReview/AlgebraTrigIntro.aspx>