Tentative Syllabus
Physics 310 – Intermediate Mechanics – Fall 2007

Instructor: Mark Masters, Ph.D.
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Office hours: Tuesday 2:30-3:30, Wednesday 11:00-12:00, Friday 1:30-2:30, or by appointment. I have open office. Generally, if you come by, I will try to help you. I will tell you if it is a bad time though.

Class meeting times: Tuesday, Thursday 4:30-6:20PM
Class meets in KT 129

Course Description
P: MA 261 and two semesters of general physics; calculus. Elements of vector algebra; statics of particles and rigid bodies; theory of couples; principle of virtual work; kinematics; dynamics of particles and rigid bodies; work, power, and energy.

The goal of this course is to learn how to solve more realistic problems than were solved in introductory mechanics. To go beyond introductory mechanics where no student has gone before!

The name mechanics leads one to think of gross objects (meaning large) and springs, and cars, etc. However, mechanics can be applied on the microscopic scale to develop models of atoms. The mechanics of oscillators leads to descriptions that apply to laser cavities. Mechanics leads to the basic idea of a Hamiltonian which is part of quantum mechanics. Mechanics leads to an understanding of planetary motion.

In this course, we will indeed look at problems that are of the gross nature. We will also look mechanics problems that describe atoms and the interaction of light with the atom. We learn about planetary motion and the Hamiltonian.

My teaching methods are different from what you may have experienced previously. I will not lecture at you. We will have a discussion. You will be given in class assignments. You will be expected to think in class. You will be expected to participate. Learning is an ACTIVITY. You cannot learn if I do the work at the board and you watch. YOU will have to do the work. You will have to prepare for class by reading in the book, by going over your notes and having questions ready.

Homework is to be done on a timely basis. I will not accept late homework.
**Exams** – There will be two exams in the semester: One at mid-term and the final. They will be two hour duration exams. Do not expect exams that are a regurgitation of the homework. They will be exams where you have to think.

**Projects** – There will be two projects for you to complete in the class. One will be a mechanics investigation (read that as an experiment). One will be a computational assignment of more significant difficulty than other computational investigations.

**Grading**

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<tr>
<td>Participation</td>
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<td>Homework</td>
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<td>Projects</td>
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Note: I am very strict on the use of vectors when talking about vectors. One cannot be sloppy about this without introducing confusion.