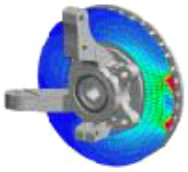
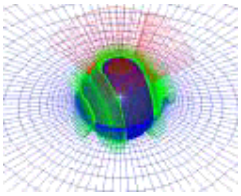


Syllabus



33-331	**Physical Mechacnics I**	**Fall 2005**

Instructor: Curtis A. Meyer
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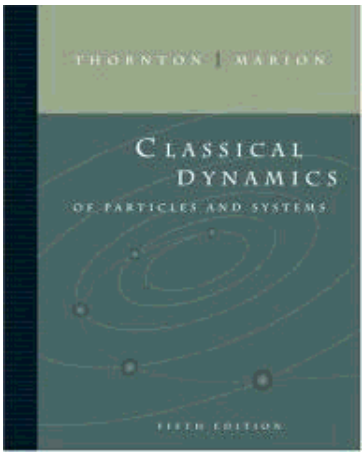
Office Hours: By appointment.

Text: *Classical Dynamics of Particles and Systems*
by S. Thornton and J. Marion



Introduction

Physical Mechanics I is the first course in the two--semester sequence on classical dynamics for physics majors. The class continues the study of fundamental concepts in classical mechanics. We will start by reviewing the dynamics of systems of particles, and then move onto motion in a noninertial reference frame. We will then spend the majority of the course on the dynamics of rigid bodies, and finally we will study

coupled oscillations. The exact material covered and the approximate time plan are shown below.

This course is a quantitative one and will involve the numerical solution of word problems. Besides learning the basics of classical mechanics, the class should improve your problem solving skills and give you more practice in using advanced mathematics to solve problems.

Course Goals

The goals of this course fall under several categories.

Learning the concepts, laws and language of classical mechanics, and how to apply them in solving physical problems.

To become more comfortable using various mathematical tools such as calculus and differential equations to solve physical problems.

To develop other skills which will be useful to you in your physics career such as approximation techniques, symmetry arguments and dimensional analysis.

To improve your problem solving techniques by working on such areas as reasoning, logic and intuition. These techniques should be helpful to you in other areas of study.

Course Topics

The following material from the textbook will be covered in this course. Note: The following are approximate and will vary somewhat.

Chapter 1: Matricies, Vectors and Vector Calculus
Chapter 2: Newtonian Mechanics - Single Particle
Chapter 5: Gravitation
Chapter 6: Some Methods in the Calculus of Variations
Chapter 7: Hamiltons's Principle - Lagrangian and Hamiltonian Dynamics
Chapter 8: Central-Force Motion
Chapter 9: Dynamics of Systems of Particles

Course Grade

Your course grade will be based on your exams and assignments. In addition, attendance and in--class participation will be noted and used to decide border line grades. Each in-class exam will account for 15% of your grade. The final exam will be account 30%, and the assignments

will make up 25% of your grade.

Assignments

There will be between nine and eleven assignments during the semester. The due dates will be announced at the time the assignment is made but we will try to have them due on the same day all the time.

Exams

There will be three exams, and a final. The exams will be held on Thursday evenings so that there will be additional time for them. On weeks during which we have exams, the Thursday and Friday classes will not be held. Exam 1 will be on Thursday September 29, Exam 2 will be held on Thursday October 27 and Exam 3 will be held on Thursday December 1.

Maintained by C. A. Meyer