Physics 3500
Analytical Mechanics
Course Syllabus – Fall 2013

Instructor Information

Instructor:	Dr. Farhang Amiri
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Office Hours:	MWF: 9:30-10:30 Tuesday: 9:30-10:30 Thursday: 8:30-9:30 If these times are not convenient, please feel free to arrange an appointment to meet at another time.

General Course Information

Lecture times:	MWF 12:30-1:20 p.m.
Location:	Classroom SL 240
Prerequisites:	Phys 2220 (Physics for Scientists and Engineers) Math 2250 (Linear Algebra and Differential Equations I)
Text:	Analytical Mechanics, Fowles & Cassiday, 7th edition

Course Outline

Course Goals:

- To learn the principles of classical mechanics. Also to become familiar with the associated definitions and related theorems of importance.
- To learn to apply these principles and theorems to a wide variety of physical situations, by learning to solve approximately 75 example problems
- To demonstrate that the principles have been learned and that problem solving skills have been mastered.
- To develop an understanding of the importance of mechanics in relation to other fields within physics, and appreciate the role it plays as the foundation for many physical concepts.
- To be able to use the material learned in this course as a basis for advanced studies, engineering applications, or other pursuits.

Specific topics covered will include:

Kinematics – inertial reference frame

Motion in one dimension

Harmonic oscillator

General motion of a particle in three dimensions

Central force problem

Non-inertial reference frames

Dynamics of Systems of Particles

Mechanics of rigid bodies

Lagrange/Hamilton formation of mechanics

Course Policy

1. Homework assignments and the due dates are given on the course calendar. The assignments will be collected on the due dates at the start of the class session.

Late assignments will be deducted 10% for each day late, not including weekends. No assignments will be accepted more than one week late.

2. Grade distribution:

Homework: 25%
Midterm 1: 25%
Midterm 2: 25%
Final Exam: 25%

3. Midterms will be taken as scheduled, in the regular classroom, and will consist of Questions pertaining to the principles, definitions and theorems, as well as problems to be Solved (similar to the homework problems). No make-up exams will be given without the **PRIOR PERMISSION** of the instructor.

4. Academic dishonesty on any assignment or exam will not be tolerated and may result in failure of the course.

5. Any student requiring accommodation or services due to a disability must contact Services for Students with Disabilities (SSD) in the Student Services Center. SSD can also arrange to provide course material (including this syllabus) in alternative formats if necessary.

Course Schedule

WEEK	MONDAY	WEDNESDAY	FRIDAY
1 8/26	Chapter 1	Chapter 1	Chapter 1 **C1-1: 1.2, 1.4, 1.9**
2 9/2	**Labor Day Holiday**	Chapter 1	Chapter 2 **C1-2: 1.18, 1.22, 1.25**
3 9/9	Chapter 2	Chapter 2 **C2-1: 2.2, 2.4, 2.7**	Chapter 2
4 9/16	Chapter 3 **C2-2: 2.9, 2.12, 2.13, 2.14**	Chapter 3	Chapter 3
5 9/23	Review **C3-1: 3.1, 3.2, 3.6, 3.7**	**Exam 1** Chapters 1, 2, 3	Chapter 4
6 9/30	Chapter 4 **C4-1: 4.1, 4.3, 4.4**	Chapter 4	Chapter 4
7 10/7	Chapter 5 **C4-2: 4.6, 4.9, 4.20**	Chapter 5	Chapter 5 **C5-1: 5.1, 5.3, 5.5**
8 10/14	Chapter 6 **C5-2: 5.8, 5.10**	Chapter 6	**Fall Break**
9 10/21	Chapter 6 **C6-1: 6.1, 6.5, 6.7**	Chapter 6	Chapter 6 **C6-2: 6.16, 6.18, 6.20**
10 10/28	Chapter 6	Review **C6-3: 6.21, 6.27**	**Exam 2** Chapters 4, 5, 6
11 11/4	Chapter 7	Chapter 7	Chapter 7 **C7-1: 7.1, 7.2, 7.5**
12 11/11	Chapter 7	Chapter 8 **C7-2: 7.7, 7.9, 7.12, 7.17**	Chapter 8
13 11/18	Chapter 8 **C8-1: 8.1, 8.6, 8.9**	Chapter 8	**Thanksgiving Holiday**
14 11/25	Chapter 10 **C8-2: 8.12, 8.13, 8.14**	Chapter 10	Chapter 10 **C10-1: 10.4, 10.5, 10.10**
15 12/2	Chapter 10	Chapter 10 **C10-2: 10.6, 10.14**	Review **C10-3: 10.15, 10.19**

Final Exam: Chapters 7, 8, 10 Wednesday, December 11