**PHYSICS 5200: Classical Mechanics I**

**COURSE OUTLINE: FALL 2013**

Room 177, Physics Building, MWF, 3:00 – 3:55 p.m.

LECTURER: P. H. Keyes OFFICE: Room 239, Physics Building, PHONE: 577-2606

e-mail: keyes@wayne.edu

OFFICE HOURS: M., 2-3 p.m.; Th., 3-4 p.m.; and by appointment.

TEXT: *Classical Mechanics*, by John R. Taylor, ISBN 1-891389-22-X

**Lectures and reading assignments**

The Lecture Schedule given below shows what sections of the text will be covered in each day’s lecture. You should read the appropriate sections of the text before coming to class if you want to obtain the maximum benefit from the lecture. The lecture will consist of a combination of explanations of the material and illustrated examples. These will generally complement, rather than repeat, the accounts and worked examples in the text.

**Homework assignments**

A few problems, usually five, will be assigned each week and will be collected one week later. At that time solutions will be posted in the glass case on the second floor of the Physics building. Thereafter no late homework will be accepted. Your homework will be marked on a scale with two points being given for each complete and correct answer and one point for each reasonable attempt. No credit will be given for minimal efforts or for work that is obviously copied from another student or another source.

**Exams**

Each hourly exam will typically consist of three to five problems similar in spirit to the homework problems. The final exam will cover all the material of this course; however, there will be slightly more emphasis on material not covered by the three hourly exams. All exams will be closed book.

Exams: I – Sept. 27, II – Oct. 25, III – Nov. 22. Final Exam: 1:20 p.m. - 3:50 p.m., Fri., December 13.

**Grading**

Your grade in the course will be determined by your performance on the homework, the quizzes, the three hourly exams, and the final exam:

Homework 1 unit

First Hourly Examination 1 unit

Second Hourly Examination 1 unit

Third Hourly Examination 1 unit

Final Examination 2 units

TOTAL 6 units

**Grading Scale**: A/A-: 80%-100%; B+/B/B-: 70%-80%; C+/C/C-: 60%-70%; D+/D/D-: 50%-60%; E 0%-50%.

## In-class policies

Out of consideration for the other students in the lecture please abide by the following rules of conduct: (1) Turn off all cell phones while in lecture, (2) Please arrive on time for lecture and do not leave early, (3) Please be mindful of your classmates.

## Academic dishonesty

All of the graded assignments are designed to measure your individual understanding of the material. No forms of cheating on these graded assignments will be tolerated (working together on the homework assignments is not considered cheating, but copying of someone else’s homework is). Anyone found cheating on any graded activity will receive a grade of zero for that part of their grade, and may receive a failing grade for the course. Use of a cell phone during an exam will be regarded as evidence of cheating.

## Pre-requisites and co-requisites

This course requires PHY2180 as a pre-requisite and PHY5100 as a co-requisite.

**Adding & withdrawing**

This semester Wednesday, September 4 is the last day a course may be added and Saturday, November 9 is the last day you may withdraw from a course.

## Students with disabilities

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

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**LECTURE SCHEDULE: FALL 2013**

DATE TOPIC HW due

8/28 Course introduction

8/30 Review of PHY2170 mechanics

9/2 **Labor Day – no class**

9/4 Chapter 1 – Newton’s Laws of Motion HW 1 due

9/6 Chapter 1

9/9 Chapter 1

9/11 Chapter 1

9/13 Chapter 2 – Projectiles and Charged Particles HW 2 due

9/16 Chapter 2

9/18 Chapter 2

9/20 Chapter 2 HW 3 due

9/23 Chapter 3 – Momentum and Angular Momentum

9/25 Chapter 3

9/27 **Exam I** , **Chaps. 1-2**

9/30 Chapter 3

10/2 Chapter 4 - Energy

10/4 Chapter 4 HW 4 due

10/7 Chapter 4

10/9 Chapter 4

10/11 Chapter 4 HW 5 due

10/14 Chapter 4

10/16 Chapter 5 - Oscillations

10/18 Chapter 5 HW 6 due

10/21 Chapter 5

10/23 Chapter 5

10/25 **Exam II, Chaps. 3-5**

10/28 Chapter 5

10/30 Chapter 5

11/1 Chapter 6 – Calculus of Variations HW 7 due

11/4 Chapter 6

11/6 Chapter 6

11/8 Chapter 7 – Lagrange’s Equations HW 8 due

11/11 Chapter 7

11/13 Chapter 7

11/15 Chapter 7 HW 9 due

11/18 Chapter 7

11/20 Chapter 7

11/22 **Exam III, Chaps. 5-7**

11/25 Chapter 7

11/27 **Holiday**

11/29 **Holiday**

12/2 Chapter 8 – Two-Body Central-Force Problems

12/4 Chapter 8 HW 10 due

12/6 Chapter 8

12/9 Chapter 8

12/13 **Final Exam** – **Chaps. 1 – 8,** Friday, 1:20 – 3:50