Physics 609 Syllabus

8/23/2005

Richard Raspet

Phone: 662-915-5888 (NCPA)

E-Mail: raspet@olemiss.edu

Office: 2018 NCPA

Office hours: Call to make sure I am in, TH afternoons to 4:00pm and MWF all day till to 3:15pm. We'll refine this as we settle into schedules. I check e-mail regularly.

Text: *Theoretical Mechanics of Particles and Continua,* Fetter and Walecka, Dover (2004)

Grading:

- 3 Tests
- 2 Homework and Pop Tests
- <u>2 Final</u>
- 7
- 100-87.5 A 87.5-75 B 75-62.5 C 62.5-50 D <50 F

Academic Regulations:

.

Regular attendance is expected. Every class is important. Please do not come late. Homework is to be turned in at the beginning of class.

The syllabus below is subject to change to accommodate instruction and/or student needs.

Goal:

To develop an understanding of Classical Mechanics of particles.

Expectations:

You are expected to read the text material before class and after class. It is expected that you will be able to reproduce any derivation presented on tests and the exam. I highly recommend that you take notes in class and annotate or recopy these notes after class so that you can use these notes to study. Some of the homework problems are difficult. You should start working on the problems early so that if you need to read other texts or go to the library you will have time to do so.

The semester is quite short. I hope to be able to get ahead of the schedule below so that you will have more time to digest information at the end of the semester. Failing that, you should be studying in advance so that Test 3 will not catch you unprepared.

Date	Chapter	Homework Due
August 23	1.1 Newton's laws	
August 25	1.2, 1.3 Systems of particles, Central forces	
August 30	1.3 Central forces	211 test worked
September 1	1.4, 1.5 Two body motion, Scattering	1.1, 1.2, 1.4
September 6	1.5 Scattering	
September 8	2.6, 2.7, 2.8, 2.9 Rotating coordinate systems	
September 13	2.10, 2.11 2.12 Newton's laws in rotating frames	1.7, 1.10, 1.15, 1.17
September 15	2.12, 3.13, 3.14, 3.15 D'Alembert's principle, Lagrange Eq.	
September 20	3.15, 3.16, 3.17 Examples, Calculus of variation.	
September 22	3.18, 3.19 Hamilton's principle, Forces of constraint	2.1a, 2.4, 2.5
September 27	3.19 Forces of constraint	
September 29	Test on Chapters 1 and 2	Test 1
October 3	Last day to withdraw	
October 4	3.20, 4.21 Generalized momenta, Small oscillation.	3.1, 3.6, 3.9
October 6	4.22 Normal modes	
October 11	4.22, 4.23 Normal mode, examples	3.11, 3.14, 3.17b
October 13	4.23 Normal mode examples	Read Problem 4.5
October 18	5.26 Rigid body theory	4.2, 4.3, 4.10
October 20	5.27, 5.28 Euler's Eq., Applications	
October 25	Test 2, Chapters 3 and 4	Test 2
October 27	5.28, 5.29, 5.30 Torque free motion, Euler's angles	
November 1	5.31 Symmetric top with gravity.	
November 3	5.31, 6.32 Symmetric top with gravity, Hamilton's Eq.	5.3, 5.4
November 8	6.33, 6.34 Charged particles in E&M fields, Canonical Transforms	5.5, 5.6, 5.10
November 10	6.35 Hamilton Jacobi Theory	
November 15	6.36 Action Angle Variables	6.2, 6.4,
November 17	6.36, 6.37 Action Angle Variables, Poisson Brackets	6.6
November 21-25	Thanksgiving vacation	
November 29	6.37 Transition to Quantum Mechanics	6.11, 6.12
December 1	Test 3, Chapters 5 and 6	
December 9	Final Exam (8:00am)	