Physics 151 Syllabus

Fall 2003

http://www.courses.fas.harvard.edu/~phys151/

Teaching Staff

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Prerequisite
- Physics 15a and 15b (or a written permission of the Head Tutor)
- Mathematics 21a and 21b

Note: This course may not be taken for credit in addition to Engineering Sciences 125.

Textbook
Classical Mechanics, 3rd edition, Goldstein, Poole & Safko (ISBN 0-201-65702-3)

Subjects
The course covers the fundamental ideas of classical mechanics and their connections with modern work and applications. Topics include: Lagrange’s equations, action principles, Hamilton’s equations, symmetry and conservation laws, Hamilton-Jacobi theory, and phase space dynamics. Applications to celestial mechanics, quantum mechanics, rigid body motion, the theory of small oscillations and classical fields, and nonlinear oscillations including chaotic systems will be presented.

Lectures
Lectures are given on Tuesdays and Thursdays, 11:30 am – 1:00 pm, in Jefferson 256. The lecture notes will be made available on the course web page.
**Sections**
Two or three sections will be offered depending on the number of enrollment. Fill out a student survey sheet to indicate your preferred day and time. The actual assignment will be announced shortly.

**Homework**
Problem sets will be distributed at Thursday lectures. Reports are due by noon on the following Thursday.
Typically, a problem set will contain 6 problems. Half of the problems will be discussed at the sections; students should be ready to solve these problems as requested by the section leader. The other half of the problems are to be solved and reported by each student.
Students will be grouped into 3 – 4 person teams that work together on the problem sets. The grouping will be made according to their preferred partners (or the lack thereof) expressed in the student survey. Each student is nonetheless required to turn in his/her own report.

**Examinations**
There will be two exams: mid-term and final. The mid-term exam will be a 1-hour exam held during a lecture time. The final exam will be 3 hours during the examination period.

**Grading**
Grades will be based on the weighted average of:
- Homework (40%)
- Mid-term exam (20%)
- Final exam (40%)