Physics 212

Intermediate Mechanics
Spring Semester 2010

Room:	Seaver Hall 109
Time:	MW 3:00 - 4:15 PM
Instructor:	Dr. Gabriele Varieschi
Office:	Seaver Hall - 110
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Office hours:	T 3:30-5:00 pm; F 10:00-11:30 am; and by appointment.

Required Text: **Fowles & Cassiday – Analytical Mechanics – 7th Ed. -Thomson/Brooks/Cole** (we will cover chapters 1-7 and 10 of this book)

Other useful books: Serway & Jewett – Physics for Scientists and Engineers, Thomson - Brooks/Cole (elementary intro to mechanics)

(not required) Marion & Thornton – Classical Dynamics – Saunders College Publishing (a more advanced undergraduate text)

Goldstein – Classical Mechanics – Addison-Wesley (a leading graduate level textbook)

Objectives and Topics: From Chapter 1 to Chapter 7 and also Chapter 10 (tentatively). Euclidian space-time. Units and dimensions. Vector algebra and calculus. Coordinate systems. Newtonian mechanics in one dimension. Kinetic and potential energy. Oscillations and harmonic motion: free, damped and forced. Motion in three dimensions. Vector operators. Non inertial reference systems: accelerating and rotating. Gravitation and central forces. System of particles. Introduction to Lagrangian and Hamiltonian mechanics. Variational principles. Prerequisite: PHYS 101. Prerequisite or concurrent enrollment: Math 245.

Learning Outcomes: Understand the concepts of mechanics from a more advanced point of view. Understand the phenomenology of oscillating systems and related applications. Conceptually understand the idea of variational principles as the basis of a modern approach to physics. Be able to solve problems of increasing complexity including non inertial reference systems, central forces and systems of particles. Understand the theoretical framework of the Lagrangian and Hamiltonian formulations of classical mechanics.

Tests: There will be three tests during the semester. They will all count toward your final grade, so please try not to miss any of them.

Test Dates: TBA

Final Exam: Wednesday, May 5, 2:00-4:00 pm, Seaver 109.
The final exam is cumulative and is equivalent to 2 tests.

Homework: Homework assignments will be given, typically one for each chapter of the book. Problem sets will be collected, graded, and will count toward the final grade. Solutions to the problems will be reviewed in class, with student participation.

Grading:	Class Attendance & Participation	10 %
	Homework	15 %
	Test 1	15 %
	Test 2	15 %
	Test 3	15 %
	Final Exam	30 %

Test Grading (approx.): <50%=F; 50-54%=D; 55-69%=C range; 70-84=B range; >84=A range.

Academic Honesty: Academic dishonesty will be treated as an extremely serious matter, with serious consequences that can range from receiving no credit for assignments/tests to expulsion. It is never permissible to turn in any work that has been copied from another student or copied from a source without properly acknowledging the source. It is your responsibility to make sure that your work meets the standard of academic honesty set forth in the "LMU Honor Code and Process" in the Undergraduate Bulletin 2008-2010.

Syllabus changes: If necessary, this syllabus and its contents are subject to revision; students are responsible for any changes or modifications announced in class.

Have a good semester. Good luck !