PHYSICS 701 – Classical Mechanics – Fall 2009

Lecturer: Maarten Golterman
Office: Thornton 305
Phone: 405-0903
E-mail: maarten@stars.sfsu.edu
Webpage: http://www.physics.sfsu.edu/∼maarten
Office hours: Tu, Th 9-10:30 am

Feel free to make use of my office hours as much as needed, and feel free to drop by some other time if you can't make it to office hours (leave a message on my e-mail or voice-mail if you don't find me). Especially with doing the homework, it helps to come ask questions if you get stuck!

Textbook: O. Johns, Analytical Mechanics for Relativity and Quantum Mechanics, Oxford University Press.

Prerequisites: Physics 485 or equivalent.

Homework: There will be weekly required homework assignments, which together will count for 20% of the grade for the course. They will be posted on my web site. You are encouraged to discuss the assignments with other students, and ask me as many questions as needed, but the writeup of the problems must be your own individual work. I will make solutions available, so **no late homework will be accepted!**

Exams and Grades: There will be one midterm exam (beginning of November) and a final exam. Both exams will be take-home exams. Each exam will count for 40% of the final grade.

Other recommended reading:
H. Goldstein, C. Poole and L. Safko, Classical Mechanics
K. Symon, Mechanics (undergraduate text)

Course contents: Lagrangian and hamiltonian mechanics, rigid bodies, small vibrations, symmetries and conservation laws, relativistic mechanics.

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

Tentative lecture schedule – Physics 701, Fall 2009

Week	*Topic*	*Reading (chapters)*
1	brief review of Newtonian mechanics	1
2	Lagrangians	2
3	Constraints	3
4	Hamiltonian formalism	4
5	Variational calculus	5, 6
6/7	Linear operators	7
8/9/10	Rotations of rigid bodies	8, 9
11/12	Small oscillations	10
13/14	Time as coordinate, Noether's theorem	11, 13
14/15	Special relativity	15, 16