Syllabus
Classical Mechanics I
(Physics H321)
Fall Semester 2011

Instructor
Prof. Jens Oberheide, 102B Kinard Lab, Dept. of Physics and Astronomy, Clemson University, Tel. 864-656-5163, Email: joberhe@clemson.edu

Class Hours
MWF 11:15 – 12:05, 301 Riggs. If I am late for class and do not have a substitute, I do not expect students to wait more than 15 minutes.

Office Hours
MWF 1:30 – 2:30; Th 10:00 – 12:00; or by appointment

Text
Required: *Classical Mechanics* (First Edition) by John R. Taylor; University Science Books, ISBN 978-1-891389-22-1, 2005, 786 pages; List Price US$ 94.50; Publisher's Discount Price US$80.32. I will use the 5th printing. Earlier printings contain a few typos; errata are published at http://www.uscibooks.com/taylor2.htm.

Recommended: *Classical Dynamics* (Fifth Edition) by S. T. Thornton and J. B. Marion; Brooks/Cole – Thomson Learning, ISBN 978-0-534-40896-1, 2004, 660 pages; List Price US$198.25.

The course will follow the required book by Taylor. The recommended book by Thornton and Marion is more rigorous and I will include some material in my lectures on a number of occasions to give a better basis for derivations or to point out some of the subtleties of the results.

Course Objectives
1. Develop the techniques needed to understand and solve the equations that describe static and dynamical mechanical systems.
2. Develop techniques in that context that will be more broadly applicable to other areas of physics.

Course Outline
1. Chapters 1-8 in the book by Taylor: *Newton's Law of Motion, Projectiles and Charged Particles, Momentum and Angular Momentum, Energy, Oscillations, Calculus of Variations, Lagrange's Equations, Two-Body Central-Force Problems*
2. Additional material on *Gravitation* and other suitable topics

Homework

Homework will be assigned on a weekly basis. The lowest two homework grades will be dropped at the end of the semester before the final course grade is calculated. Homework is due on the date assigned. Late homework will not be accepted without a very good excuse. **Problems which are assigned as extra homework and bonus questions are *required* problems for honors students.**

Some of the assigned homework problems will require numerical calculations or numerical solutions. The use of MATLAB or other suitable software for those problems is required. The University has a MATLAB site license for Windows, Linux and Mac.

Course Grades and Weights
- 40% Homework
- 20% Mid-term exam
- 25% Final exam
- 15% Short in-class quizzes

A: 90-100; B: 75-90; C: 60-75; D: 40-60; F: 0-40

Attendance Policy

Attendance is required for the first class. Thereafter, it is not required but is *strongly recommended*. It is the responsibility of the student to be aware of what is announced in class, including changes to homework assignments and/or quiz announcements. Please also see the general statement on attendance in the Undergraduate Announcements.

Class Web Page

The course web site can be accessed via Blackboard. Course announcements, assignments, instructional material etc. can be found there.

Academic Integrity Policy

The Clemson University statement on academic integrity applies, as posted in the Undergraduate Announcements. In addition, students may discuss homework problems with other students, but only in general terms. **Students may not look at another student's written solution before the due date, and the work the student turns in must be entirely his/her own.**

Disability Access Statement

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.