

82-320 Classical Physics Spring 2004 Syllabus

Lecture Times: MWF 9:10 - 10:10

Lecture Location: HS 345

Instructor: Dr. Michael Briley, HS 348
phone 7104
email: mike@maxwell.phys.uwosh.edu

Office Hours: M/F 2:00 – 4:00, or any time in the afternoon/evening that you can find me.

Text: *Analytical Mechanics*, 6th edition, by G. R. Fowles and G. L. Cassiday

Course Prerequisites: 82-109 and 67-172, or permission from instructor.

Course Description: The physical and mathematical concepts associated with one dimensional motion, two and three dimensional motion, including the use of different coordinate systems and accelerating reference frames are developed. Analytical, numerical, and graphical methods using modern computer technology will be employed.

With this in mind, we will cover at least the first 6 chapters of the text:

- Fundamental Concepts, Vectors
- Newtonian Mechanics, Retilinear Motion of a Particle
- Oscillations
- General Motion of a Particle in Three Dimensions
- Noninertial Reference Systems
- Gravitational and Central Forces

If enough time remains at the end of the semester, we may also cover chapter 7, Dynamics of Systems of Particles.

The computational portion of this class will be carried out using the *Mathematica* or *Maple* software packages. This software, as well as minimal documentation, is available on some of the Physics Department computers. While no *a priori* knowledge is assumed, it is probably in your best interests to begin experimenting with either of these as soon as possible.

Course Goals: Upon completion of this course, you should be able to take a physical system and apply the concepts discussed in this class to define the underlying principles governing its dynamics. Moreover, you should be able to formulate mathematical representations of these principles and use them to deduce the past and future motions of the system (either by analytical or computational methods).

Grades: Grades will be based on a combination of test scores (3 - 4 tests, amounting to 60% of the total grade), homework assignments (30%), and a comprehensive project (10%).

Grades will be assigned according to the following table:

<u>% of total possible score</u>	<u>Letter Grade</u>
90 - 100	A
85 - 89	A/B
80 - 84	B
75 - 79	B/C
62 - 74	C
57 - 61	C/D
51 - 56	D
50 or Below	F

(Note that this scale may be modified if necessary)

Tests: Tests will be scheduled for a two or three day window during which you can take the test (i.e., if it is scheduled for a Wed., you could take it Tues., Wed., or Thurs.) at your convenience. Although the tests will be designed for one hour, you will also have as much time as you need to complete them.

Comprehensive Project: Four weeks before the end of the semester, a comprehensive project will be assigned. The purpose of this project is to bring together several of the principles and techniques from this course and combine them in the analysis of a physical system. The format of the project will be a simple "mini-journal" article with an introduction, narrative, and summary. Computer drawn graphs, tables of data, and the like should be included when they enhance the presentation (more about this later in the semester).