Physics 606
<< Classical Mechanics>>

Fall 2020

Instructor: Dr. Y. H. Shih
Office: PHYS 310
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Lectures: Tu Th 11:30 am -12:45 pm, Online

Text: Marion and Thornton <<Classical Dynamics>>

References: H. Goldstein <<Classical Mechanics>>
Landau & Lifshitz <<Mechanics>>

Prerequisites: Student should have had a standard undergraduate course in intermediate mechanics and a standard undergraduate course in mathematical physics or engineering mathematics. In particular, it will be assumed that the students understand the basic theory of ordinary differential equation and basic material about vector spaces and matrices.

Homework: Homework due day will be noticed with the assignment. You are encouraged to discuss the problems together; however, each person should work out their assignment independently. Assignments are to be written up professionally with computer graphics where appropriate. The computer worksheets should be readable by anyone. This requires explanations of what you are doing.

Grading Method: Homework 20%, Midterm 30%, Final 50%.

Office Hours: W 12:30-3:30pm. You are welcome to call me anytime to my home number: (410) 630-4224. We can also setup a Webex meeting if necessary.
Topic Outline:

I. Newtonian mechanics and simple mechanical systems
II. Dynamics of a system of particles - 1
III. Hamilton’s principle–Lagrangian and Hamiltonian dynamics
IV. Central-force motion
V. Motion in a non-initial reference frame
VI. Dynamics of a system of particles -2
VII. Dynamics of rigid bodies
VIII. Linear oscillation and coupled linear oscillations
IX. Hamilton dynamics, canonical transformation, Poisson brackets and phase space.

COVID-19:

Please see this Google doc for UMBC Policies and Resources during COVID-19.