

Physics 606
<< Classical Mechanics >>

Fall 2022

Instructor: Dr. Y. H. Shih

Office: PHYS 310, 009 (Lab)
Telephone: 52558 (o), 51933 (Lab.)

Lectures: Mo We 10:00 - 11:15 am,

Room: Performing Arts
& Humanities 123

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 see me anytime. Please call to make sure where I am (office or lab). We can also setup a Webex meeting if necessary.

Topic Outline:

- I Newtonian mechanics and simple mechanical systems
- II Lagrangian and Hamiltonian dynamics
- III Central-force motion
- IV Motion in a non-inertial reference frame
- V Dynamics of a system of particles
- VI Dynamics of rigid bodies
- VII Linear oscillation and coupled linear oscillations
- VIII Mechanical waves and wave equation
- 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.