

Physics 610

Analytical Mechanics

Instructor: Jason Kumar
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Class meets:
T Th 1:30pm-2:45pm
WAT 417A

Required Textbook:
Classical Mechanics (3rd Edition)
Herbert Goldstein, Charles Poole, John Safko

Topics to be covered:

Lagrangians

The Two-Body Problem

Rigid Body Motion

Hamiltonians and Canonical Transformations

(Note: Small Oscillations and Relativistic Mechanics will *not* be covered unless time permits. Students are encouraged to review this material in the textbook on their own.)

Grading:

The course grade will be based on homework and exams

60% -- homework
20% -- midterm
20% -- final

Student Learning Outcomes:

At the successful completion of this course, students will be expected to:

- 1) Be able to solve problems in classical mechanics, including advanced examples of two-body motion and rigid body motion.

- 2) Understand the Lagrangian formalism, and its application to solving problems in classical mechanics.
- 3) Understand the Hamiltonian formalism, canonical transformations, and their relations to quantum mechanics and statistical mechanics.