

Introduction to Classical Mechanics

Fall 2008

Instructor: Lester Kim

E-mail: gunsfnr89@hotmail.com

This course is about mechanics at a level beyond AP Physics C for students who have a strong background in math and an interest in classical physics.

No textbooks are required for this class but here are some recommendations:

Principles of Physics by Serway and Jewett

Fundamentals of Physics by Halliday, Resnick, & Walker

University Physics by Young & Freedman

Physics for Scientists and Engineers by Douglas C. Giancoli

Introduction to Mechanics by Kleppner & Kolenkow (this one is more advanced than the other elementary texts)

Introduction to Classical Mechanics: With Problems and Solutions by David J. Morin (if you think you are strong in math, I would highly recommend using either this book or Kleppner & Kolenkow)

You may also want to have a calculus book for reference since we will be using calculus extensively.

Schedule

(9/13) Registration and introduction

(9/20) Problem solving strategies; vectors; units

(9/27) Position; velocity; acceleration; falling bodies; projectile motion

(10/4) Circular motion; relative motion; Newton's laws; free body diagrams; pulleys; friction

(10/11) Circular motion dynamics; differential equations; momentum

(10/18) Work; kinetic energy; conservative forces; potential energy

(10/25) Small oscillations; center of mass; collisions; center of mass frame

(11/1) Rotations; moment of inertia; torque; torque examples; angular momentum

(11/8) Simple harmonic motion; gravitation

(11/15) Review or modern physics