

Study Guide (for final Exam)

1. Everything covered before the third midterm.
2. Rotational motion (Rolling part):
 - a. What is the difference of translation and rotation?
 - b. Combination of the translation and rotation: rolling
 - c. Energy and momentum in the rolling cases.
3. Equilibrium and Elasticity:
 - a. Equilibrium condition: BOTH total force and total torque are zero.
 - b. Models for shear modulus and Young's modulus
4. Gravitation:
 - a. Gravitational quantities: acceleration, force, potential energy.
 - b. Satellites on stable orbits. (their velocity, kinetic energy, total energy, angular momentum.)
 - c. Energy at orbits of various height, rocket launching
5. Fluids:
 - a. Pressure, property of fluids.
 - b. Buoyant force.
 - c. Continuity of the flow of fluids.
 - d. Pressure of flowing fluids (Bernoulli's equation).
6. Oscillations:
 - a. Simple harmonic motion. (equation, solution)
 - b. Angular frequency.
 - c. Applications (spring, pendulums)
 - d. Damped oscillation. (damping factors, over- and under-damping)