

Use lecture notes, in-class activities, readiness assurance tests and review questions for midterm 1. Also notice there is a sheet of units and equations available on the website, which will be available on the exam.

[Click here for link to it.](#)

Bring your calculator!!

Expect multiple choice, true-false, matching, and calculations.

Physics of Motion

Velocity is distance/time.

Acceleration is change in velocity over time.

Know units for each.

Velocity in an accelerating system equals acceleration rate x time elapsed.

The acceleration of gravity on Earth, at the equator, at sea level is $10 \frac{m}{s^2}$

Distance traveled in an accelerating system = $\frac{1}{2} (a)(t)^2$. If you know two of these: distance, acceleration, and time, you can calculate the third.

Acceleration of gravity not dependent upon object's mass. Freely falling objects accelerate at constant rate (neglecting air resistance).

Projectiles subject to gravity acceleration vertically, but no acceleration in horizontal direction. Satellites are projectiles moving horizontally fast enough to fall only as fast as the curvature of Earth.

Newton's laws of motion

Objects retain their state of motion unless acted upon by outside forces.

Acceleration is directly proportional to net applied forces

Acceleration is inversely proportional to mass

For every action, there is an equal and opposite reaction.

Be able to calculate net force from known perpendicular forces.

Be able to calculate acceleration, force, or mass if you know two of those from

$$F = m \cdot a$$

Energy

Potential energy = mass x acceleration of gravity x height

Kinetic energy = mass x (velocity)² = force x distance

Photosynthesis converts Sun's energy to chemical energy

Energy is conserved. Changes from one form to another, never lost.