

SPH4UI Exam Review



Key Concepts

■ Kinematics

- d-t, v-t, a-t graphs
- Big 5 equations
- Relative Velocity Problems (crossing the river problems)
- Projectiles

■ Dynamics

- Newton's three laws and application
- Uniform Circular Motion
- Planetary Motion (Universal Gravitation)

Key Concepts

■ Energy & Momentum

- momentum / impulse relationship
- work / energy relationship
- conservation of momentum problems
- conservation of energy problems
- forms of potential energy (elastic, gravitational)

■ Fields

- vector vs scalar field
- gravitational and electric fields
- gravitational and electric forces

Key Concepts

■ Wave Nature of Light

- optical cavities
- evidence that light is a wave (interference, polarization etc.)
- universal wave equation

■ Modern Physics

- two main theories that started modern physics (signally the end of classical physics)
- special relativity – time dilation and relative velocities
- quantum energy relationship of a photon
- Standard Model of particle physics

Crib Sheet

- 8 1/2 x 11 page
- handwritten
- no diagrams
- no pre-written examples
- no definitions
- formulas including variable names are allowed (titles also allowed)
- **MUST BE HANDED IN WITH EXAM**

$$t = t' \gamma$$

$$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

t - non moving frame
 t' - moving frame.
 γ = gamma.

... IF IN DOUBT ASK....