Lecture 1-23-12

- Angular Momentum
  - Angular momentum definition
  - Review of motion under central force
  - Conservation of angular momentum
- Application to orbital mechanics:
  - the role of initial velocity: circular, elliptic or escape conditions
  - Elliptic orbit properties and Orbit transfer and main equations
  - Circular orbits, elliptical orbits, main equations
  - Orbit transfer
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• Chapter 12 recap:
  – Orbital mechanic: conservation of angular momentum
  – Problem 12-90 and two force bodies review

• Chapter 13: Work-Energy
  – Work done by external forces, work-energy principle
  – gravity and springs, kinetic energy
  – Conservative forces (gravity, springs), potential energy
  – Problem 13.67  of 8\textsuperscript{th} Edition (F=ma, work energy etc)
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• Continue with 13.67 of 8th Edition:
  – F=ma vs energy technique, max displacement, max velocity

• Work-energy continued
  – Normal force (or tension) signifying contact
  – Other interesting problems: 13.40, 13.43, 13.44 and 13.74

• Impulse momentum:
  – Basic definition and simple application
  – Internal forces among two bodies
  – Jumping off a boat, two boats pulling one another