

PHYS 170 Study Notes

Mechanics

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1. General Principles

1.1. The Four Horseman of Mechanics

- Length
- Mass
- Time
- Force

So you basically take three of them and solve the 1 left.

1.2. US Customary Units

LENGTH	MASS	TIME	FORCE
meter m	kilogram kg	second s	force kg m s^{-2}
foot ft	slug $\text{lb s}^2 \text{ft}^{-1}$	second s	pound lb

Table 1: SI and US Customary (FPS) Units for Mechanics

2. Gravity

$$F = G \frac{m_1 m_2}{r^2} \tag{1.1}$$

$$F = ma \tag{1.2}$$

3. Force Vectors

4. Equilibrium of a Particle

5. Force System Resultants

6. Equilibrium of a Rigid Body

7. Friction

8. Kinematics of a Particle

9. Kinetics of a Particle: Force and Acceleration

10. Kinetics of a Particle: Work and Energy

11. Kinetics of a Particle: Impulse and Momentum