

Chapter 4 Lecture Notes Summary
PHYS011 - Kariapper

Formulas:

$$\boxed{\sum \vec{F} = m\vec{a}}; \quad \sum F_x = ma_x, \quad \sum F_y = ma_y, \quad \sum F_z = ma_z$$

$$F_g = mg$$

$$f_{s,\max} = \mu_s N$$

$$f_k = \mu_k N$$

Main Ideas

Newton's three laws
Weight, Normal Force
Solving problems
Friction

Newton's First Law

Every object continues in its state of rest, or of uniform velocity in a straight line, as long as no net force acts on it

Newton's Second Law

$$\vec{a} = \frac{\sum \vec{F}}{m} = \frac{\vec{F}_{net}}{m}$$

The acceleration of an object is directly proportional to the net forces acting on it, and is inversely proportional to its mass. The direction of the acceleration is in the direction of the net force acting on the object.

Newton's Third Law

Whenever one object exerts a force on a second object, the second object exerts an equal force in the opposite direction on the first.