



# Kinematics of Particles - I

Rectilinear Motion and Relative Motion

ESM 2042

Dynamics of Rigid Bodies

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# Objectives

- ❑ • **Describe** the basic kinematic relationships between position, velocity, acceleration, and time.
- ❑ • **Solve** problems using these basic kinematic relationships
- ❑ • **Identify** the appropriate sign and direction of acceleration and velocity in a situation

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# Recap

❖ **Kinematics of Particles** is the study of geometry of translational motion without reference to the cause of motion.

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# Rectilinear Motion

- A particle moving along a straight line is said to be in **rectilinear motion**.



Uniform Rectilinear Motion



Uniformly Accelerated  
Rectilinear Motion

# Rectilinear Motion

- A particle moving along a straight line is said to be in **rectilinear motion**.
- Rectilinear motion can be described by the following:
  - ❖ **Time**
  - ❖ **Position** – The location of a particle with respect to a fixed reference point



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