

ME 3050 Lecture - Dynamics Review

- **Dynamic**

”Dynamics is the study of how moving objects behave. Dynamics is the part of mechanics that studies movement and its causes. The study of the causes of motion and changes in motion is known as dynamics. Dynamics is the study of how moving objects behave.”

”The dynamical system concept is a mathematical formalization for any fixed ”rule” which describes the time dependence of a point’s position in its ambient space. ”

- **Translational Motion**

- Position
- Velocity
- Acceleration

- **Rotational Motion**

- Position
- Velocity
- Acceleration

- **Particle Motion**

- What do mean by this?

- **Rigid-Body Motion**

- What do mean by this specifically? Mathematically?

- **Degrees of Freedom (DOF)**

- What does this mean?

- Examples:

- The **dynamics** are represented as ordinary differential equations called the

_____ of _____.

- Deriving the _____ of _____

is typically done in one of two ways.

1. Newtonian Approach - Vector Based Method

- Translational

- Rotational

2. Conservation of Energy Approach - Energy Based Method

- Kinetic Energy

- Potential Energy

- **Example:** DJI Phantom with 3-axis Camera Gimbal

