Kinematics:

- **position:** $\vec{r} = \displaystyle\int \vec{v}\, dt$

- **velocity:** $\vec{v} = \dfrac{d\vec{r}}{dt} = \displaystyle\int \vec{a}\, dt$

- **acceleration:** $\vec{a} = \dfrac{d\vec{v}}{dt} = \dfrac{d^2\vec{r}}{dt^2}$

Dynamics: cause and effect: $\vec{F} = m\vec{a}$

Modes of motion: translation, rotation

Conservation laws: energy, momentum, angular momentum

Effective forces: elastic, contact, friction, ...

Fundamental forces: gravitational, electric, magnetic, . . .