Theory of Machines

- Simple mechanism
- Motion Analysis
  - Velocity Analysis
    - IC Method
    - Relative Velocity Method
  - Acc^{n} Analysis
- Gears
- Gear trains
- Flywheel
- Governors
- Balancing
- Mechanical Vibration
- Cam and followers
- Gyroscope

Mechanical engg.

⇓

Engg. of mechanics

↓

Study of Motion

↙ Study of motion without considering basic cause of motion i.e. force

Kinematics

$\vec{v} = \frac{d\vec{s}}{dt}$, $\vec{a} = \frac{d\vec{v}}{dt}$

$\vec{j} = \frac{d\vec{a}}{dt}$

↘ study of motion with the consideration of the basic cause of motion i.e. force

Dynamics (kinetics)

↘

Newton's law

$\vec{F}_{ext} = \frac{d}{dt}(m\vec{v})$

eg dynamic viscosity

Pa-sec or $\frac{N}{m^2}$ Sec.

↳ kg that's why it called dynamic

kinematic viscosity : m^2/s