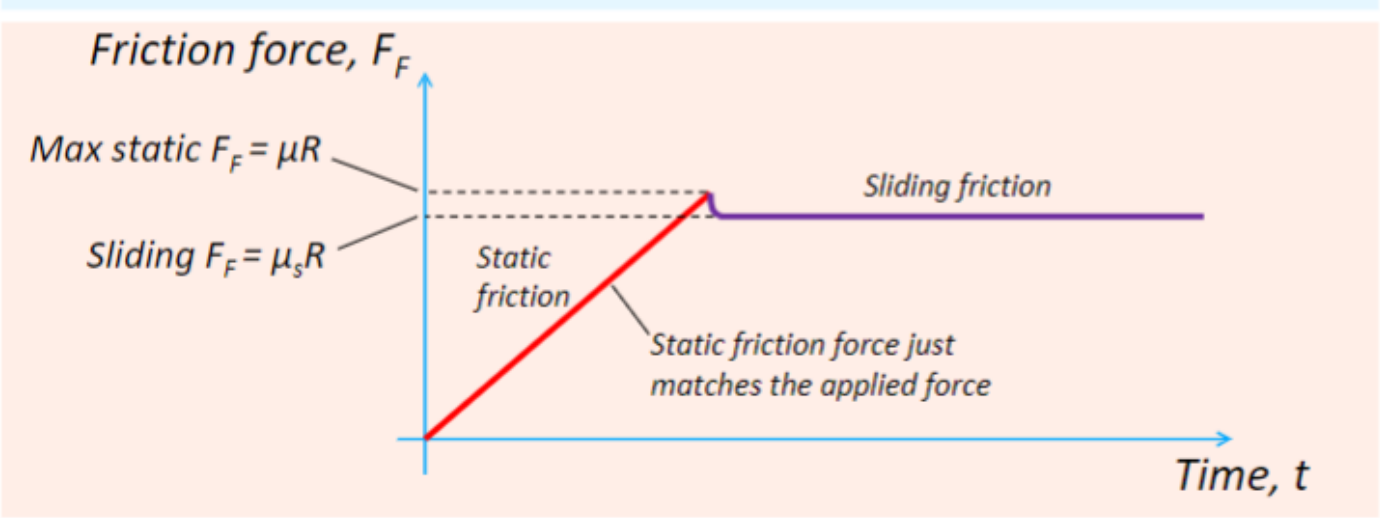
II: Friction

1: Introduction of friction

- A force that tends to oppose motion.

2: Law of Dry friction

2.1: Maximum friction force (limiting friction)

- $F_F = \mu R$, R is the normal press force.
- μ is the **coefficient of static friction**.
- 

- Summary:
  - When it is static: $F_F = F$ and max$F_F = \mu R$
  - When it is moving: $F_F = \mu_s R$
  - μ_s is coefficient of sliding friction
  - Normally $\mu > \mu_s$

3: Momentum and Impulse

3.1: Introduction

- Aimed to process the changing force.

3.2: Linear momentum

- $p = mv$, it is a vector quantity.
- A new definition of force, force= rate of change of momentum.
  $F_x = \dfrac{dp_x}{dt}$.
- Worked for a rigid body (no rotation).

3.3: Linear impulse

- $\int_{t_1}^{t_2} F dt = \Delta p = p_2 - p_1$
- Note that $p_2 - p_1$ is a vector operation.