University of Illinois

TAM 251

Mechanics of Materials

Notes

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Homework due on Monday Mornings.

1 Stress

$$\perp \text{ Stress} = \sigma = \frac{F}{A} \tag{1}$$

The units of Stress are Pascals (Pa) or psi, depending on the unit system that is being used.

$$\text{Pa} = \frac{N}{m^2} \tag{2}$$

$$\text{psi} = \frac{lbf}{in^2} \tag{3}$$

- Tension

  Elongation

  For normal tensile stress $\sigma > 0$

- Compression

  Shortening

  For normal compressive stress $\sigma < 0$

- Internal Forces

  Stress

  $\sigma = \frac{F_n}{A}$

  Sheer

  $\tau = \frac{F_t}{A}$