Fluid Mechanics (FM)

→ Engineering discipline

→ Study the behavior of fluids → liquids (FM)

→ gases (thermo-dynamics) (TM)

- Static fluid (rest)
- Moving (flowing)

Munson Ch. 1 through 7.

FM → FL. Statics (Forces)

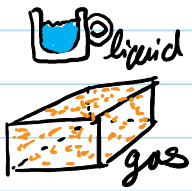
→ FL. kinematics
- time
- velocity
- accel
- NO forces

→ FL. Dynamics
- What forces we have
- What work they can do
~ experimentally determined relations.

Not:

a solid (keeps shape, manages strain) 

Fluid:
- state of matter
- needs a container
- take shape of the container
- Sustain compression & tension
- deform continuously under shear stress.
- a continuum
- cohesive forces cause fluid molecules to form a surface (always horizontal)
- average properties (density, sp. weight, sp. gravity)




notes: $\tau$ shear, tangential

FM: Our approach is MACRO (vs micro)
- Bulk properties

HW: Return solutions with 3-significant digits

Evaluate: $\left(80\ \frac{MN}{s}\right)(5\ mm)^2$

$$\left(80\times10^6\ \frac{kg\,m}{s^3}\right)\left(5\ \cancel{mm}\right)^2\left(\frac{1\ m}{1000\ \cancel{mm}}\right)^2 = 2000\ \frac{kg\,m^3}{s^3}$$

$$= 2\ \frac{kN m^2}{s}$$