ENGR 335

KEY WORDS AND STUDY QUESTIONS FOR CH 1 AND CH 2

hydrostatics
hydrodynamics
gas dynamics

system
extensive property
intensive property
density
specific weight
specific gravity

shear stress
shear strain
shear strain rate
velocity distribution
velocity gradient
velocity profile

Newtonian fluid
absolute viscosity
dynamic viscosity
kinematic viscosity
Non-Newtonian fluid

surface tension force
contact line
contact angle
surfactant

vapor pressure
cavitation

bulk modulus
compressibility

1. Give an example of an engineering *application* that requires knowledge of fluid mechanics.

2. What happens to a Newtonian fluid as a shear stress is applied?
   What happens to a solid as a shear stress is applied?

3. Where are surface tension forces most likely to be significant? In what direction do surface tension forces act?

4. How does the absolute viscosity of nitrogen vary with temperature?
   Of water? Of oil?

5. Can cavitation occur in a building compressed air supply piping network? Why or why not?

6. What is the strain rate in a flow field where velocity is uniform over all space? What is the shear stress?

7. Give an example of a non-Newtonian fluid and describe the behavior that indicates that it is not Newtonian.