



MODULE 8

Understanding Purposes for Reading and the Reading Process

EXPERIENTIAL EXERCISE:

The following passage has words missing from it—write the missing vocabulary word.

Body forces

Surface forces

stress

normal stresses

pressure

Forces on Fluids

In discussing the flow of water (or any other fluid), it is necessary to consider the forces acting on a fluid particle. These forces are usually divided into two classes, body forces and surface forces.

_____ are those that do not require direct contact with the fluid: they “act at a distance.”

One body force that plays an important role in hydrological systems is gravitational attraction, the weight of the fluid. Another example of a body force is an electromagnetic force. _____

_____ are those caused by direct contact between two fluid particles or between fluid and solid. The tangential force in the conceptual experiment we employed in defining viscosity is an example of a surface force--the dragging of the water along by the floating plate required the plate to be in contact with the fluid surface. A normal force is one oriented perpendicular to a surface. Instead of using surface forces directly we usually employ the concept of force per unit area or _____. There are two types of stresses that we consider influence mechanics--_____ and tangential stresses. The latter, as we have already seen, are termed shear stresses. The normal stress, when applied to a fluid medium, is referred to as _____.

From Passage from Hornberger, G., Raffensperger, J., Wiberg, P., Eshleman, K. (1998.) *Elements of physical hydrology*. Baltimore: Johns Hopkins UP.