## Prelab Practice: Archimedes' Principle

## Review the Textbook:

- PHYS 1401: Serway \& Vuille: Section 9.6, Example 9.8 \& 9.9
- PHYS 2425: Serway \& Jewett: Section 14.4, Example 14.5 \& 14.6

A wooden block of $1.1 \mathrm{~cm} \times 1.8 \mathrm{~cm} \times 6.0 \mathrm{~cm}$ is floating in water. The density of water is $1000 \mathrm{~kg} / \mathrm{m}^{3}$ and the density of the wooden block is $600 \mathrm{~kg} / \mathrm{m}^{3}$.

1. What is the magnitude of the gravitational force acting on the block?
( 0.070 N )
2. What is the magnitude of the buoyancy force acting on the block? ( 0.070 N )
3. What is the specific gravity of the block?
4. If the block is floating such that its long side is oriented vertically, how deep is the long side submerged in water?
$(3.6 \mathrm{~cm})$
5. What force must be applied to the block to have the block be exactly half--submerged? State both, the magnitude and the direction of the force.
(0.012 N upward)
6. What force must be applied to the block to have the block be completely submerged? State both, the magnitude and the direction of the force.

## (0.046 N downward)

