1] Complete the Fluid Mechanics Concept Inventory by logging in to Learn@UW, selecting this course from the Fall 2007 list, then going to the Quizzes tab on the top line near the left-hand side. There will be only one option to choose from, called the Fluid Mechanics Concept Inventory. Do your best to answer the questions, and don’t look up answers in the book. You will fill this out again at the end of the semester (it is part of ongoing assessment of the instruction at the University). Completion of the Concept Inventory both before and after the semester is REQUIRED, but you will not be graded on it.

2] A scuba diving tank initially holds 0.25 ft³ of air at 3000 psi. If the diver uses the air at a rate of 0.05 kg/min, approximately how long will the tank last? Assume that the temperature of the gas remains at 20 °C.

3] Skimmer boards are used by throwing a thin board, approximately 1 m long and 0.75 m wide, onto the water as a wave recedes from the beach (see http://www.youtube.com/watch?v=tdG41nogayI). By coordinating the run and board launch, the purveyor, who jumps on the board, gets a little ride. Assuming that the initial speed is 5 mph, and that the water thickness is 50 µm and constant, how long will the ride last? The end of the ride is assumed to be when the speed drops to 10% of its initial value. The rider and board weigh 150 lb.

4] Using EES, plot the velocity of the rider in problem #3 as a function of time for (a) a warm summer day in the tropics (30 °C), and (b) a hearty Canadian enjoying a balmy 3 °C winter day at the beach.

5] What is the water pressure at the bottom of a 120 foot tall water tower in (a) psig, (b) psia, (c) kPa gauge?