

The study sheets handed out during the semester have key words and concepts that you should be familiar with. Some subset of these will be covered in "**short answer questions**" on the final exam.

The following outline shows the areas where you may be asked to demonstrate **problem solving skills** on the final exam.

1. Fluid statics (ch. 3)
 - manometers
 - forces and moments on flat submerged surfaces
 - buoyancy forces
2. Conservation of mass (ch. 4)
 - flow rate in a conduit
 - tank filling and draining problems
3. Pressure variation due to fluid acceleration (ch. 5)
 - acceleration of fluid in a conduit (negligible friction)
 - application of the Bernoulli equation to, stagnation point pressure, draining tanks, nozzles, etc.
4. Conservation of momentum (ch. 6)
 - reaction forces on nozzles, bends, etc.
 - application of conservation of momentum to non-uniform velocity profiles
5. Energy equation and pipe flows (ch. 7 and ch. 10)
 - flow rate and pressure variation in piping and duct systems
 - piping systems with a pump
 - pipes in parallel
6. Flow measurements (ch. 13)
 - Pitot-static tubes, obstruction flow meters, integration of velocity profiles
7. Surface resistance and drag forces (ch. 9 and 11)
 - boundary layers
 - form drag, skin-friction drag, and total drag on an object in a flow
 - forces and moments generated by flow over an object
 - terminal velocity

The **final exam** for this class is scheduled for 7:30 to 9:30 on Friday, December 15 in JEB 26. This exam will be an open book, open notes exam. Bring calculator.

A **review session** will be held as scheduled during class time on Friday, December 8. I would like to run the review as a question and answer session. This means I will be available to *answer your questions and work on problems of your choice*.

Office hours during finals week: 2:00 to 3:00, Wednesday, December 13 and 3:00 to 5:00, Thursday, December 14