12.09.2014 09:15-10:00

To be completed as a group.

1. Set up a force balance on a single phase fluid volume in a pipe. Draw the pipe and the direction of the forces.
    a. Add the forces and express the wall shear stress using the hydraulic approximation.
    b. Briefly describe how one determines that the friction factor is dependent on the Reynolds number and the hydraulic roughness of the pipe.

2. Set up a force balance for a two phase flow. Draw the pipe and forces.
    a. List the physical parameters which are important for two phase flow
    b. Describe the form of the friction factors in multiphase flow.