Tyler Gray
MET 330
Tgray023@odu.edu

Test 3 Reflection

1) Test 3 Incorporated many of the course objectives such as explaining the fluid dynamics in pipes, applying Bernoulli's Equation to fluid systems and computing friction losses in pipes for a variety of configurations.
2) If I were to take this again, I would improve my excel sheet, the mistake I made was with the iteration process in excel. By doing this I would be able to create a fully customizable spreadsheet to change one or many variables without rewriting the entire equation again saving a lot of time.
3) 1. Pump head
   a. Initial setup = 1/5 out of 1/5
   b. Using Bernoulli's to solve for hA = 1/5 out of 1/5
   c. Compute all 11 losses = 1/5 out of 1/5
   d. Compute Pump Power = 1/5 out of 1/5
   e. Correct Final Results = 0.5/5 out of 1/5

      Total Part 1 = 4.5/5 out of 5/5

   2. Total flow rate after opening valve

   a. Setting up the equations = 1.5/7 out of 2/7

   b. Consider energy losses in each branch = 1/7 out of 1/7

   c. Setup iteration process = 0.5 /7 out of 1/7

   d. Solving equations using excel = 0.5/7 out of 1/7

   e. Tried all valve opening cases = 1/7 out of 1/7

   f. Correct results = 0/7 out of 1/7

      Total Part 2 = 4.5/7 out of 7/7

   Total Grade = (90/2) * (4.5/5 + 4.5/7) = 69.43

My strengths were with the first section and my correct placement of points and use of Bernoulli's equation. My weakness was the excel portion of the second part, I struggled with creating the correct formula to set up the iterations.

4) Discuss the following:
    a. I struggled with setting up the excel sheet. I attempted to troubleshoot them by rewatching every lecture covering this topic again, in total I watched each of them twice over.
    b. I would focus more on the excel portion when redoing this test. Even though I couldn't correctly set up the sheet I rewatched hours of the lectures discussing how to do it.
    c. In this test I learned how to apply Bernoulli's to a series and parallel pipe system. From a constant Motor power, I determined flow rate when changing the opening of a valve in the parallel system while maintaining a minimum flow rate in the heat exchanger.
    d. These concepts are beneficial when designing a system like what was demonstrated on the test. Depending on the systems set up, in our case having control of a valve position allows you to change/determine the total flowrate of the system.
    e. I believe this would be used in industrial situations to increase total flowrate while maintaining the same input power.
    f. Yes, I do.
    g. I would apply this knowledge in the fluids field as an alternative design solution to achieve a desired flowrate instead of altering pressure of pipe diameter.
    h. I have not yet, but I defiantly believe these skills learned will be very useful.
    i. I feel most comfortable with the use of Bernoulli's and series pipeline systems.
    j. The content of this course will intersect with many career fields, anything that deals with fluids of any type will benefit from what has been learned.
    k. In total including reviewing old lectures over the weekend, I spent a total of 16hrs on this test. 8hrs. were spent on review and 8hrs were spend on the test itself. If I had

more time to spend on this assignment alone, I would have allocated more time in reviewing the excel portion of the lectures.