

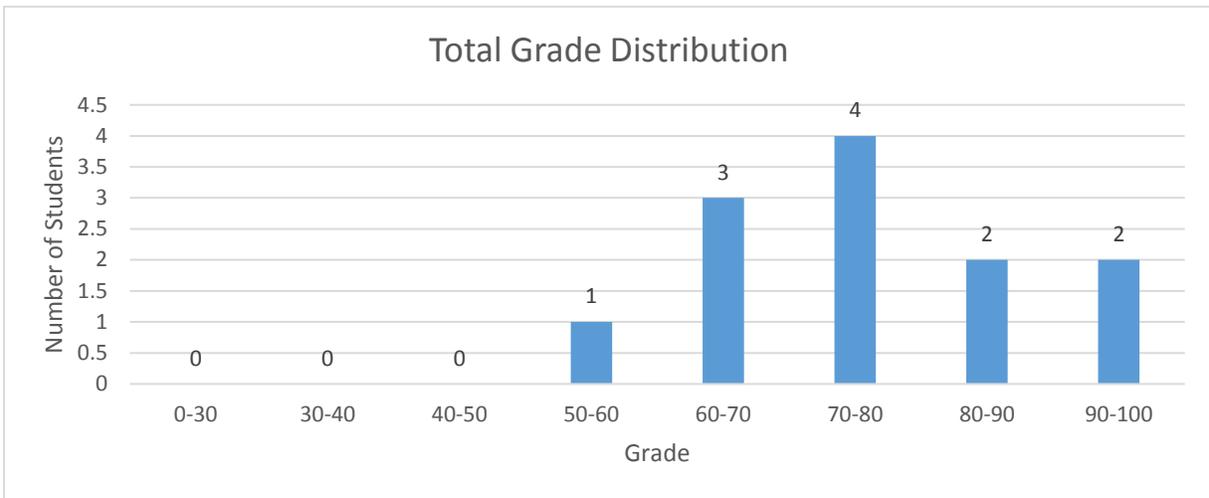
# Exam 2 Report

11/8/2010

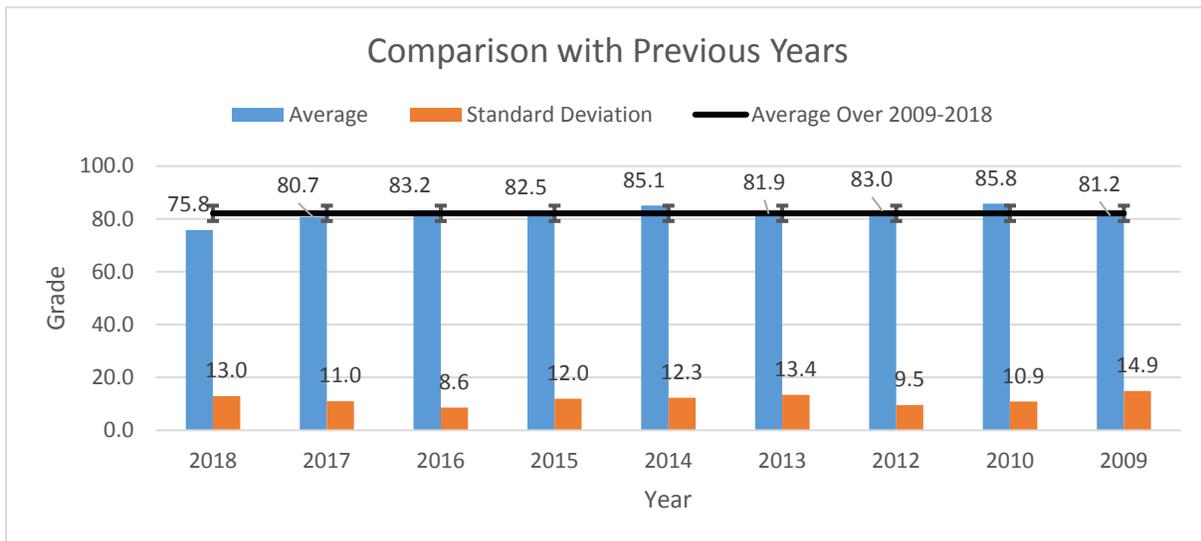
## 1. Summary

|                              |      |
|------------------------------|------|
| Total number of students     | 12   |
| Attended                     | 12   |
| Missed                       | 0    |
| Number of problems           | 3    |
| Average grade                | 75.8 |
| Standard deviation of grades | 13   |

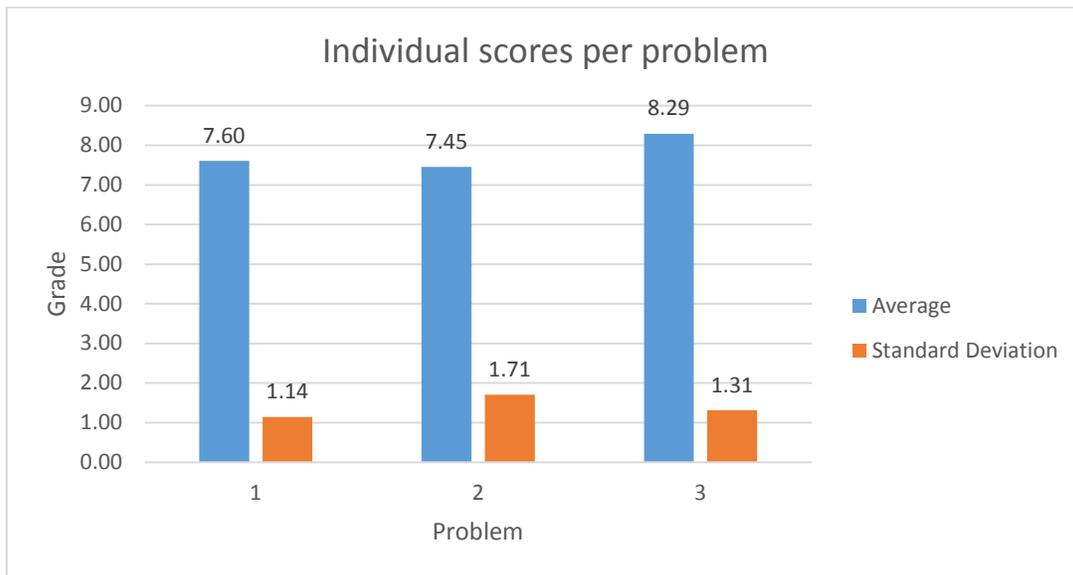
## 2. Grade distribution



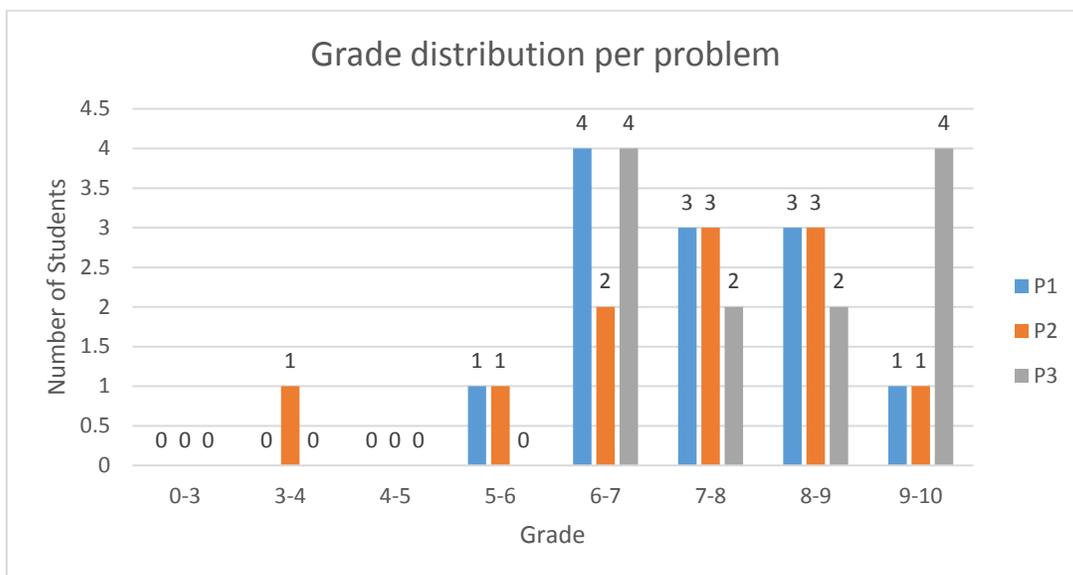
## 3. Comparison with past years



#### 4. Individual problem breakdown



#### 5. Grade distribution per problem



## 6. Comments

- Many students did not complete problems due to difficulty and/or time constraint

### PROBLEM 1

- Some students did not neglect the inertial term
- Many students incorrectly neglected  $\frac{v_r}{r^2}$  and/or  $\frac{1}{r} \frac{\partial}{\partial r} \left( r \frac{\partial v_r}{\partial r} \right)$
- Most students had difficulty substituting  $v_r = f(z)/r$  into simplified PDE and solving for  $v_r$

### PROBLEM 2

- Most students had difficulty applying the moment of momentum equation
- Many students neglected the y-moment of momentum component at section 3
- Many students neglected the pressure force
- Some student did not use energy equation to calculate pressure at section 2

### PROBLEM 3

- Some students incorrectly assumed friction factor is the same for all pipes
- Some students incorrectly assumed the velocity is the same for all pipes
- Some students did not assume same loss for parallel pipes A and B (i.e.  $(h_f)_A = (h_f)_B \rightarrow$   
 $\left( f \frac{L V^2}{d 2g} \right)_A = \left( f \frac{L V^2}{d 2g} \right)_B$ )