

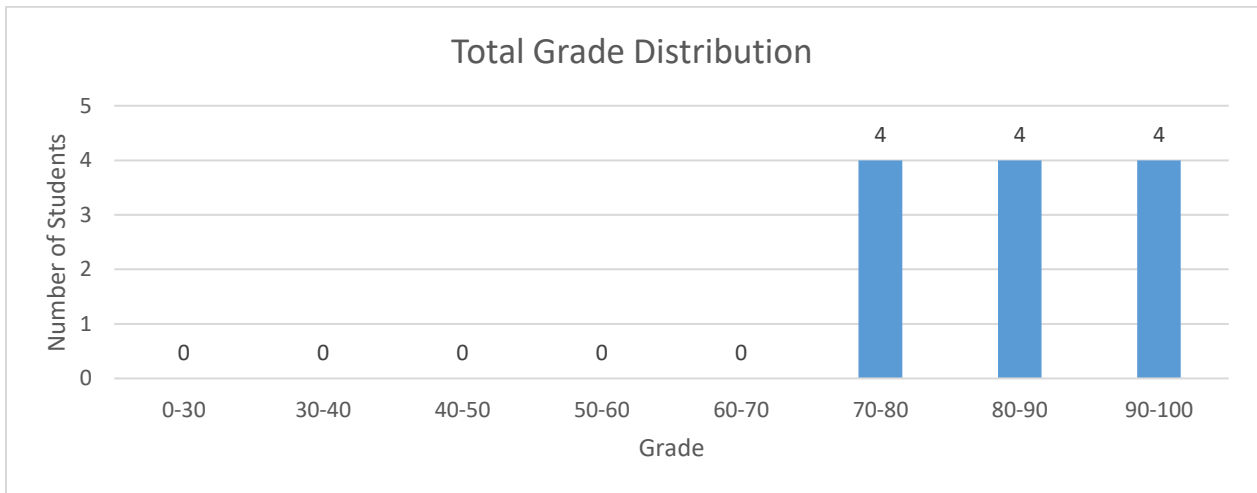
# Exam 1 Report - without outlier

10/18/2019

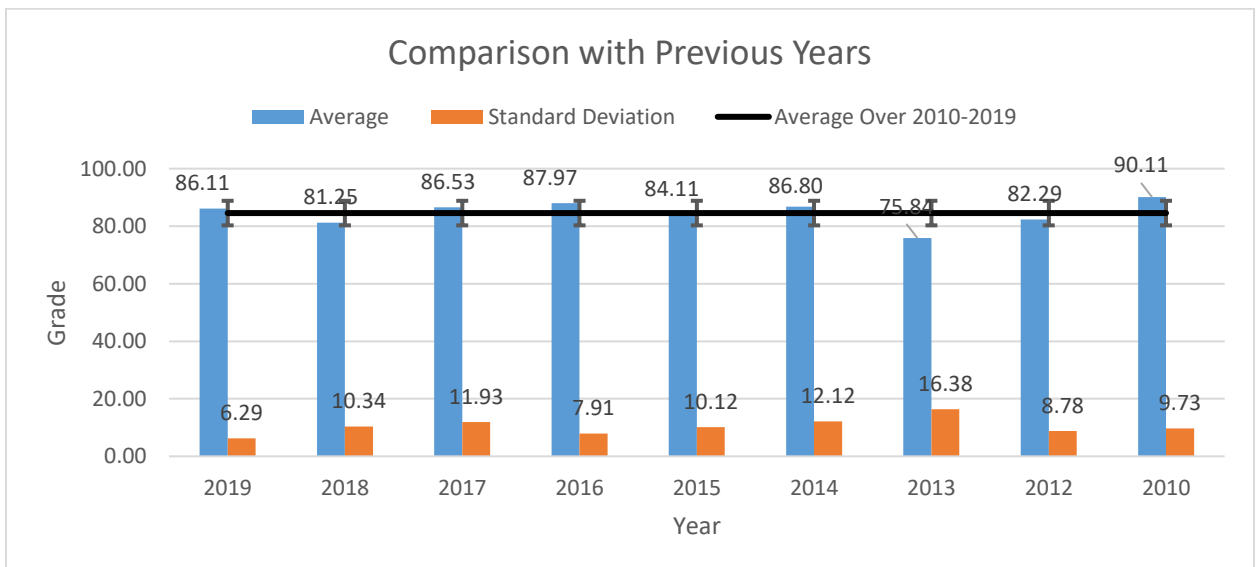
## 1. Summary

|                              |       |
|------------------------------|-------|
| Total number of students     | 14    |
| Attended                     | 12    |
| Missed + Outlier             | 2     |
| Number of problems           | 3     |
| Average grade                | 86.11 |
| Standard deviation of grades | 6.29  |

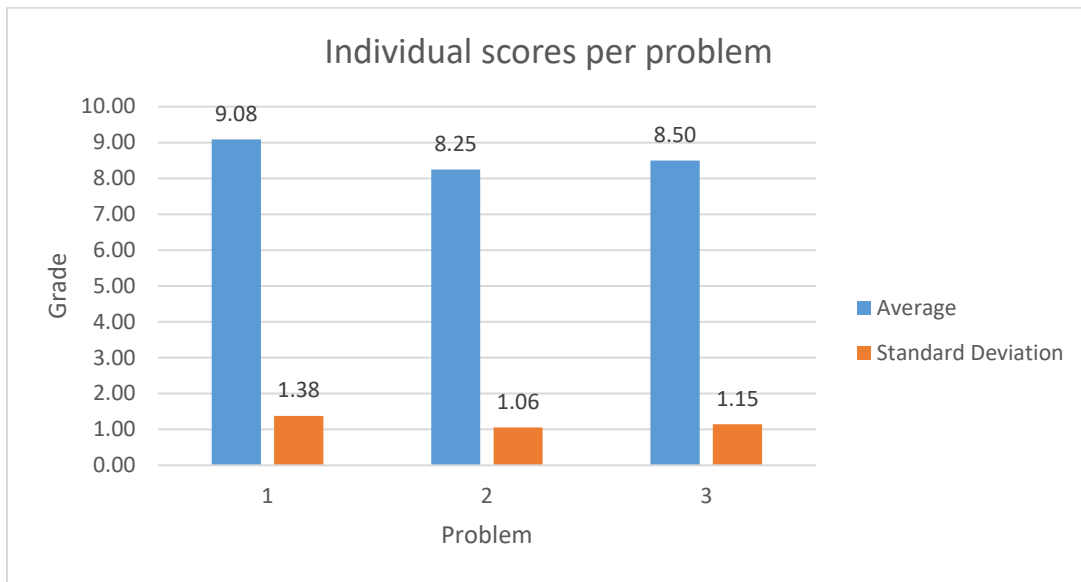
## 2. Grade distribution



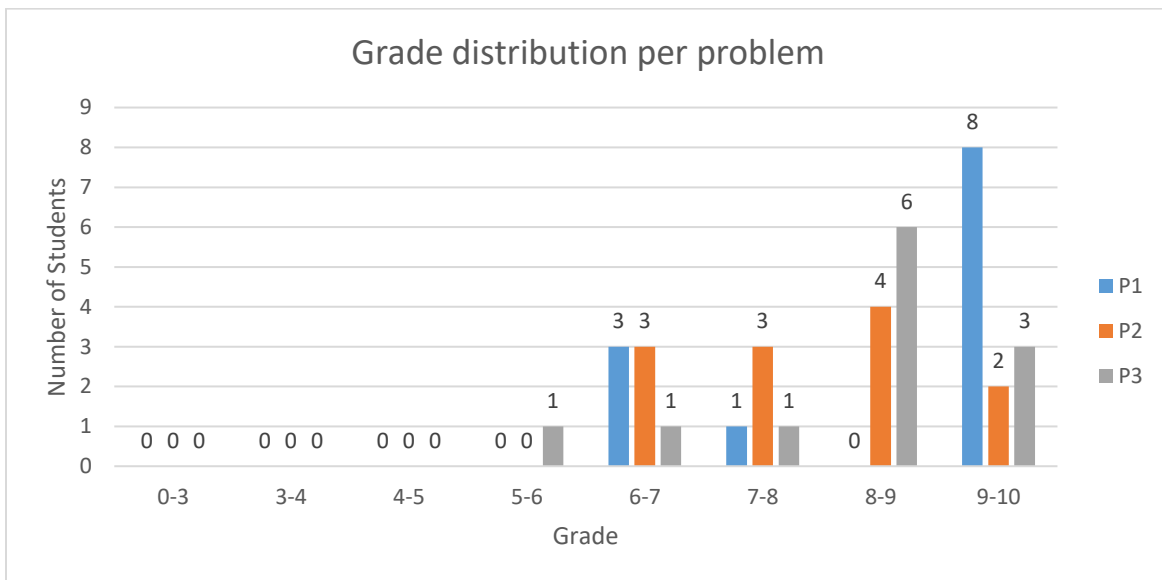
## 3. Comparison with past years



#### 4. Individual problem breakdown



#### 5. Grade distribution per problem



## 6. Comments

### PROBLEM 1

- Some of students used Momentum equation incorrectly.
- One student confused the Gage pressure with Hydrostatic pressure in Bernoulli's Equation.
- Some of students could not use Momentum equation to get Velocity.

### PROBLEM 2

- Several students Missed pressure Force for calculating Moment.
- Some of students did not use correct moment arm.
- One student multiplied density to get Moment  $\vec{M} = \rho(\vec{r} \times \vec{F})$
- Some of students couldn't use the continuity equation and calculate wrong Velocity.
- Some of students indicated wrong sign at pressure term in Momentum equation.

### PROBLEM 3

- One student missed the pressure gradient, and another student used gravity term rather than Pressure term in N-S Equation.
- One student couldn't neglect the convection(Non-linear) term which should be canceled out with the fully developed assumption.
- One student used wrong boundary condition.
- Several students couldn't integrate  $u(y)$  correctly to get flow rate  $\dot{Q}$
- Some of student couldn't use the shear stress formula  $\tau_w = \mu \frac{du}{dy}$