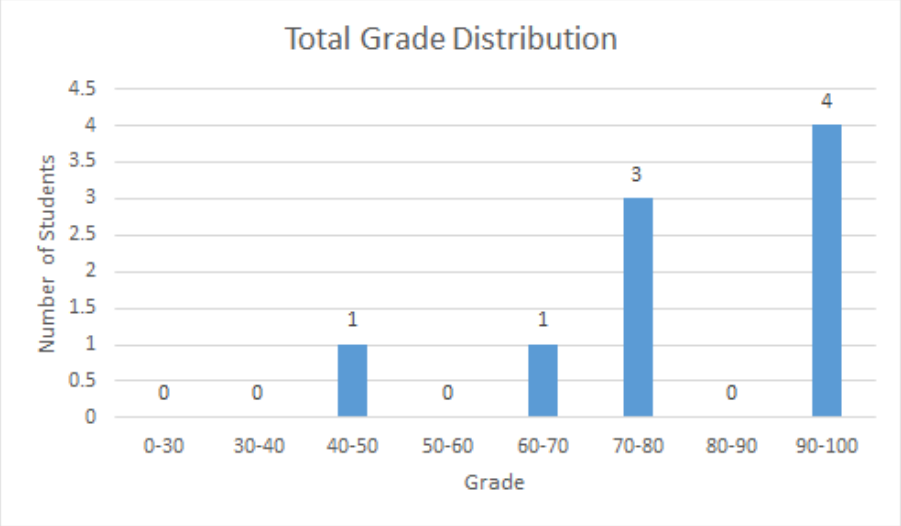
Final Exam Report

12/17/2021

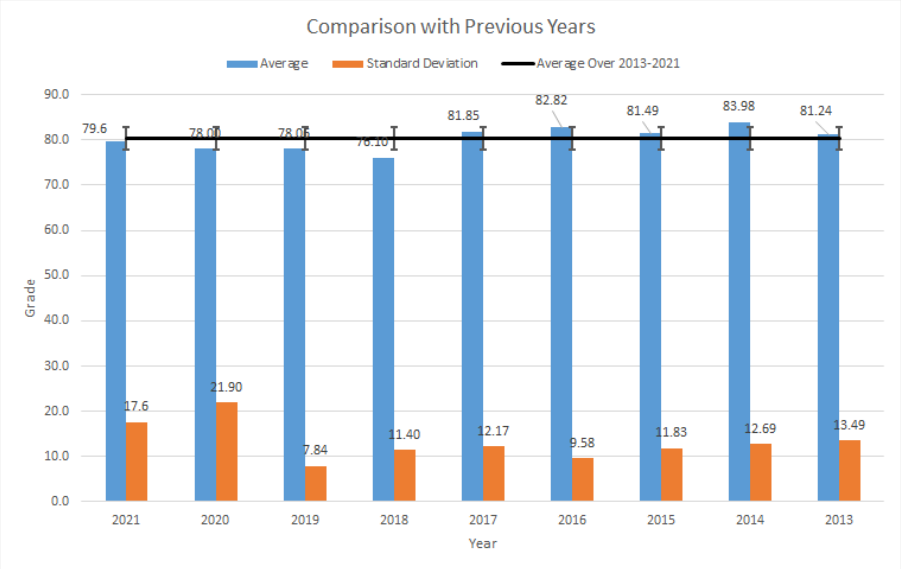
1. Summary

Total number of students	9
Attended	9
Missed	0
Number of problems	6
Average grade	79.63
Standard deviation of grades	17.63

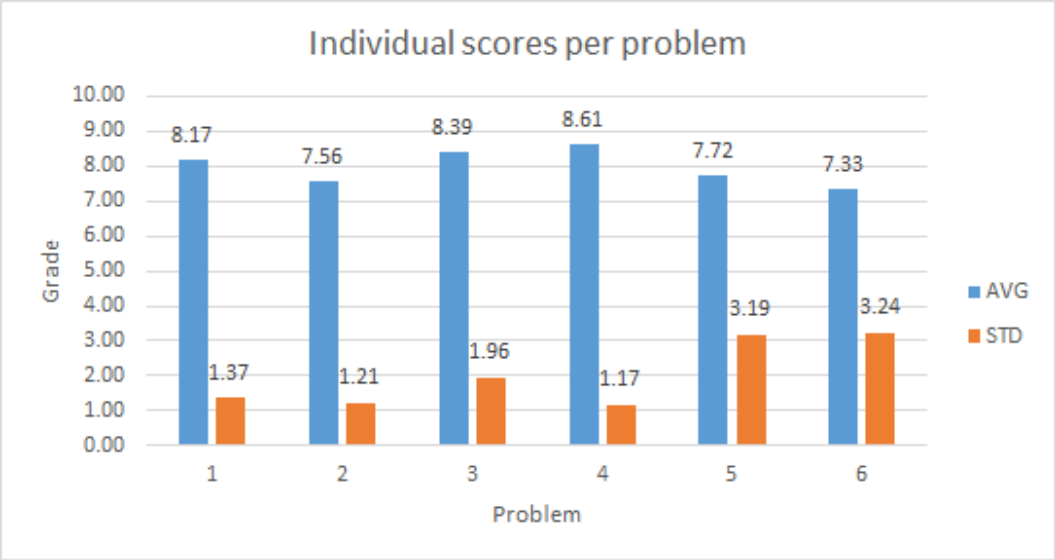
2. Grade distribution



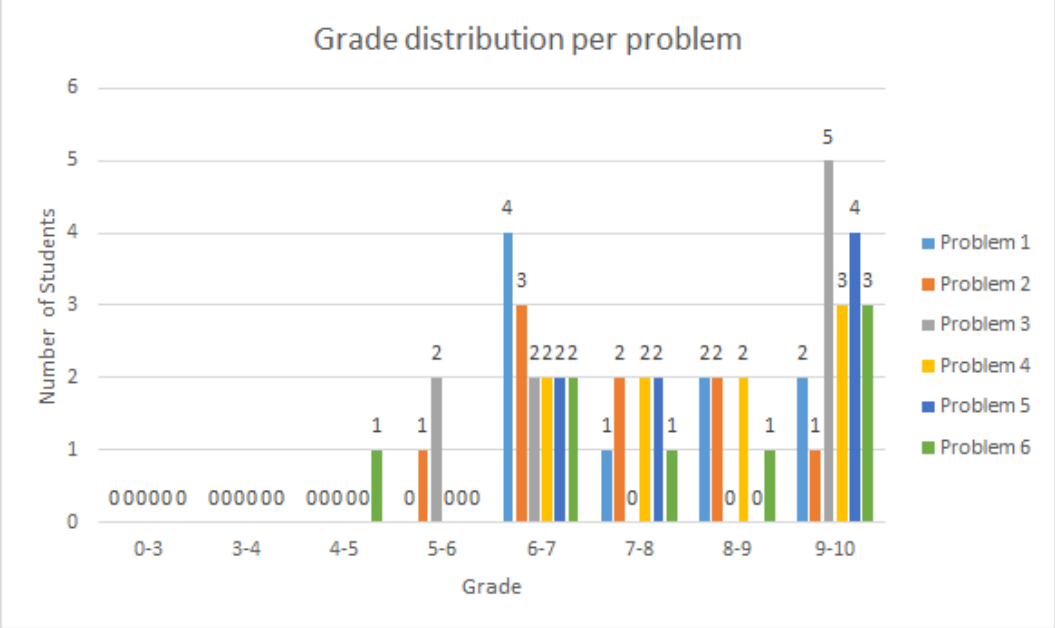
3. Comparison with past years



4. Individual problem breakdown



5. Grade distribution per problem



6. Comments

PROBLEM 1

- Two students received the 100% points
- Some of students missed the pressure term when they derived the force acting on the object
- Several people could not calculate the correct velocity at the wake region
- It seems like that one student do not know how to approach to solve this kind of problem appropriately

PROBLEM 2

- Many students could not use the solution when the $\lambda = 0$ and only apply the condition of $\lambda = -\frac{\rho v_0}{\mu}$, so derived incorrect velocity profile
- Several students did not apply the boundary conditions and derived the wrong velocity profile
- Some of students could not simplify the momentum equation appropriately and derived the wrong λ values that makes incorrect velocity profile

PROBLEM 3

- Five students received the 100% points
- One student could not understand the problem correctly and used the inappropriate formula to get C_D
- One student made a mistake when he consider the area to derive the C_D
- Some of students could not derive the appropriate formula to get the load weight that need to be added in the parachute

PROBLEM 4

- Several students could not derive the appropriate boundary layer thickness with the given formula
- One student consider both side of plate when he calculate the drag force on the plate which is wrong
- Some of students could not consider the appropriate area when they derive the drag force of the plate
- A few people made a mistake when they apply the drag coefficient formula and one student made a mistake for the decimal points of number

PROBLEM 5

- Four students received 100% points but one student did not solve this problem
- Most students calculated the pipe velocity correctly using the energy equation appropriately

- Several students could not derived the head loss formula correctly and calculated wrong value of head loss coefficient

PROBLEM 6

- Three students received 100% points but one student did not solve this problem
- One student made a simple mistake after he apply the boundary conditions
- It seems like that one student do not know how to approach to solve this kind of problem
- Several students could not derive the v_r and v_θ correctly with the given stream function and apply inappropriate boundary conditions