

## The Density Competition

Please bring safety glasses and aprons or lab coats to the competition. Points will be deducted for the teams who do not bring these materials with them. Calculators and scratch paper are allowed.

This competition will consist of two parts: determining the density of mixtures of ethanol and water that will be provided and then using these solutions to determine the density of various plastics that will be provided.

There will be 5 stations at which a series of fluids will be provided at these stations, the teams will be asked to determine the densities of the fluids and will then be asked to place the plastic in each of the beakers to determine the density of the plastic itself.

In most instances, there may be a need to predict an intermediate solution position that will give the more accurate density for the plastic. The team must predict how the solution should be made and then execute just that one solution. Points will be generated for:

1. Identifying the densities of each pre-made solution.
  - a. Show the calculations required to generate those densities.
2. Predicting the appropriate solution that will accurately describe the density of each plastic.
  - a. Please show your work.
3. Make 50 ml of your predicted solution.
  - a. Test the plastic and report the outcome.
  - b. If the predicted solution is not accurate, **DO NOT MAKE ANOTHER SOLUTION**, but predict which solution you would make next and some partial points will be awarded for the effort.
  - c. Predict the density of the plastic.