Objectives:

In this experiment, you will

- Determine the optimum wavelength for spectrophotometric analysis of a FD&C Yellow No. 5 Food dye solution.
- Prepare and test the absorbance of FD&C Yellow No. 5 Food dye standard solutions.
- Calculate a standard curve from the test results of the standard solutions.
- Analyze the absorbance of an FD&C Yellow No. 5 Food dye in a Gatorade solution.
- Calculate the molar concentration of the FD&C Yellow No. 5 Food dye in a Gatorade solution.
- Calculate the number of mg of the FD&C Yellow No. 5 Food dye per Liter in a Gatorade solution. **Note: The molar mass of FD&C Yellow No. 5 Food dye is 534.4 grams/mole.**
- Report your result.

Experiment:

1. Develop a procedure to determine the amount of FD&C Yellow No. 5 Food dye in a Gatorade solution.
   Helpful tips:
   a. Think safety first. Make sure you have the proper PPE to perform this lab, i.e., safety glasses, gloves, etc.
   b. Determine the optimum wavelength to analyze the FD&C Yellow No. 5 Food dye standard solutions using a Spectra Vis Spectrophotometer.
   c. Develop a table of dilutions of FD&C Yellow No. 5 Food dye Stock and Distilled Water, Concentration values, and measured Absorbance values. Remember that absorbance measurements are most accurate and sensitive in the range of 0.2 – 1.0. **Note: The FD&C Yellow No. 5 Food dye classroom Stock solution has a concentration of 150 micromoles/Liter or 0.00015 moles/Liter.**
   d. Measure the absorbance of the yellow Gatorade beverage. **Note: Remember that absorbance measurements are most accurate and sensitive in the range of 0.2 – 1.0.**
   e. Develop a scatter plot of absorbance vs. concentration data and develop a best-line fit linear equation of your data.
   f. Calculate the concentration of the FD&C Yellow No. 5 Food dye in moles/Liter and report your result.
   g. Calculate the amount of the FD&C Yellow No. 5 Food dye in mg/Liter and report your result. **Note: The molar mass of FD&C Yellow No. 5 Food dye is 534.4 grams/mole.**

Safety Precautions:

Avoid contact with eyes, skin, and clothing. Wear chemical splash googles and chemical resistant gloves. Wash hands thoroughly with soap and water before leaving the laboratory. Please follow all laboratory safety guidelines.