

Laboratory Syllabus

1. Use correct techniques and safe procedures in laboratory investigations:
 - a. differentiate between safe and unsafe procedures
 - b. use information from the MSDS (Material Safety Data Sheets) to assess chemical hazards
2. Data collection and organization:
 - a. organize raw data in tables, charts and graphs
 - b. collect and records raw data using appropriate units and significant figures and record uncertainties when appropriate
3. Evaluating scientific data and drawing conclusions:
 - a. analyze and interpret data
 - b. explain observations
 - c. deduce inferences and predictions
 - d. explain the relationship between evidence and explanation
 - e. write a valid conclusion based on the interpretation of results
 - f. compare their results to current literature
 - g. calculate percent error and standard deviation when appropriate
 - h. validate their conclusions by replication of their findings
4. Design and plan laboratory experiments to investigate chemical principles:
 - a. identify questions and/or suggest a hypotheses
 - b. determine appropriate procedures to test a hypotheses or answer a question
 - c. identify variables
 - d. use a control when appropriate
 - e. evaluate the adequacy of experimental controls.
 - f. select and use appropriate measurement tools

AP Course Guide correlation:

V. Laboratory (5 –10%)

The differences between college chemistry and the usual secondary school chemistry course are especially evident in the laboratory work. The AP Chemistry Exam includes some questions based on experiences and skills students acquire in the laboratory:

- making observations of chemical reactions and substances
- recording data
- calculating and interpreting results based on the quantitative data obtained
- communicating effectively the results of experimental work

IB Course Outline correlations:

- 11.1.1 Describe and give examples of random uncertainties and systematic errors.
- 11.1.2 Distinguish between *precision* and *accuracy*.
- 11.1.3 Describe how the effects of random uncertainties may be reduced.
- 11.1.4 State random uncertainty as an uncertainty range (\pm).
- 11.1.5 State the results of calculations to the appropriate number of significant figures.
- 11.2.1 State uncertainties as absolute and percentage uncertainties.
- 11.2.2 Determine the uncertainties in results.
- 11.3.1 Sketch graphs to represent dependences and interpret graph behaviour.
- 11.3.2 Construct graphs from experimental data.
- 11.3.3 Draw best-fit lines through data points on a graph. (These can be curves or straight lines.)
- 11.3.4 Determine the values of physical quantities from graphs.