## Enabling Objectives

1. Towards fulfillment of terminal objective 1:
   1. Students will demonstrate the use of Boyle’s, Charles’s and Avogadro’s laws appropriately.
   2. Students will be able to interpret experimental plots that express these laws.
   3. Students will define standard temperature and pressure (STP) and the value of the gas constant R.
   4. Students will derive the ideal gas law and manipulate the mathematical equation to determine the density of a gas.
2. Towards fulfillment of terminal objective 2:
   1. Students will recognize the relationship between temperature measurement, kinetic energy and root mean square speed.
   2. Students will evaluate distribution plots of molecular speed and describe the relationship between these plots and temperature.
   3. Students will explain the effect of changing temperature on the speed of molecules and the distribution of speed.
   4. Students will calculate and compare root mean square speeds of gases at fixed temperatures.
   5. Students will apply Graham’s Law of Effusion and compare rates of effusion of gases at a given temperature.
   6. Students will identify an unknown gas by calculating its molar mass using Graham’s Law.
3. Towards fulfillment of terminal objective 3:
   1. Students will explain partial pressures.
   2. Students will relate partial pressures of gas mixtures to mole fraction.
   3. Students will mathematically relate partial pressure to mole fraction and total pressure of a gas mixture.