## Course Title: CHEMISTRY B

**Course No**. 4360 **Grade level**: 9-12

**Text and Resources**:
N/A

### Course Content: Key Content Standards and Course Objectives

**The following objectives are based on the grades 9-12 Chemistry standards:**

1. **Solutions:** Solutions are homogenous mixtures of two or more substances. Concept of solute and solvent (6-a), the dissolving process and random molecular motion (6-b,c), calculating the concentration of a solute (6-d).
2. **Chemical thermodynamics**: Energy is exchanged or transformed in all chemical reactions and physical changes of matter. the motion of molecules with regard to temperature and heat flow (7-a), exothermic and endothermic energy (7-b), the effects of condensation and freezing on energy (7-c), problem solving related to heat flow and temperature changes (7-d).
3. **Reaction Rates**: chemical reaction rates depend on factors that influence the frequency of collision of reactant molecules (8-a,b,c).
4. **Chemical Equilibrium:** Chemical equilibrium is a dynamic process at the molecular level. LeChatelier's Principle (9-a), how equilibrium is established (8-b).
5. **Organic and Biochemistry:** The bonding characteristics of carbon lead to many different molecules with varied sizes, shapes, and chemical properties, providing the biochemical basis of life (10-a,b), Amino acids as the building block of proteins (10-c).
6. **Nuclear Processes:** Nuclear processes are those in which an atomic nucleus changes, including radioactive decay of naturally occurring and man-made isotopes, nuclear fission, and nuclear fusion 11-a, b), radioactive isotopes and nuclear reactions (11-c), radioactive decay (11-d), alpha, beta and gamma radiation (11-e).

**Investigation and Experimentation**

Students will ask meaningful questions and conduct careful investigations addressing the content of the above Chemistry standards.

## Course Description

**Course Value**: *One Semester

**Credit Value**: 1 – 5 credits
**Prerequisite:** Chemistry A

This course is designed for the advanced high school student. The instructor will direct the resources and guide the assignments.

Chemistry B will continue to explore both the macroscopic properties of matter and the microscopic properties of matter's constituent particles. As chemistry is a very sequential and hierarchical science, it is important that students have successfully completed Chemistry A, or a comparable course of study.

*Open entry/open exit

### Methods of Study

1. Students will complete all activities assigned.
2. Students will participate in discussion with other class members and/or teacher.

### Evaluation of Performance Standards

1. Students will complete all assignments with a minimum of 70% accuracy.
2. The supervising teacher will be satisfied with the quality of the student's work.
3. The student must receive a minimum score of 70% on a teacher assigned final evaluation.
4. Letter grade contracts are optional and require a higher level of performance.