



Southern Victoria High School  
*Pro Utilitate Hominum - For the Betterment of Mankind*  
13 School Street, Perth-Andover NB E7H 4T4

Phone: 273-4762

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## Chemistry 112

**Teacher:** Mr. Christopher McLaughlin  
**Classroom location:** B212

**Course Time:** Period 5  
**E-mail:** [Chris.McLaughlin@nbed.nb.ca](mailto:Chris.McLaughlin@nbed.nb.ca)

**Course Requirements:** A mark of at least 80% in Science 10 is strongly recommended.

### COURSE DESCRIPTION

Chemistry 112 is an introductory course in the study of matter and its interactions. Central to this study is an explanation of the structure and function of the basic unit called an atom. Lecture and demonstration methods are used together with laboratory investigations of various topics covered throughout the course. You will be responsible for all material presented in class and reading assignments. Students must be able to demonstrate an understanding of the major concepts that will be covered. They need to demonstrate an understanding of the interrelationships among science, technology and society. They also need to demonstrate the skills and thinking processes associated with the practice of science.

### COURSE OBJECTIVES / OUTCOMES

#### Unit 1: From Structures to Properties (38 hours)

1. Classification of Matter (6 hrs) This section reviews the concept that the classification of matter is based upon its properties, the major categories of matter (e.g. pure substance, mixture, element, compound, solution), and differences between physical and chemical properties.
2. Underlying Structure of Matter (8 hrs) This section reviews the concept of matter consisting of atoms, ions, and molecules.
3. Elements and Compounds (8 hrs) This section reviews the concept that elements combine to form compounds having characteristic properties and assigned individual names.
4. Chemical Bonding (9 hrs) This section focuses on how the electronegativity of atoms can be used to predict the type of compounds formed (ionic or molecular) and the polarity of molecular compounds. Metallic bonds and covalent network solids are also investigated in this section.
5. Molecular Shape – VESPR Theory (2 hrs) Using previously introduced concepts of bond capacity, lone pairs and electronegativity, students will learn to predict three-dimensional molecular shapes and bond angles using VSEPR (valence shell, electron pair repulsion theory). Students will learn to identify isomers where more than one structure is possible for a given formula.
6. Intermolecular Forces (2 hrs) Using the idea of molecular shape and polarity, students will learn to predict the types of forces that act between molecules (i.e. dispersion forces, dipole-dipole forces and hydrogen bonding) and how these bonds influence the properties of materials.
7. Properties (3 hrs) Students will learn how different types of bonds account for the properties of ionic, molecular, metallic and covalent network substances.

#### Unit 2: Stoichiometry (52 hours)

1. The Mole (12 hrs) The concepts of the mole and molar mass of compounds are introduced, as well as how to write complete, balanced, chemical equations. Molar conversions are explored using known values of mass, volume, moles, molarity, and particles using Avogadro's constant.



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2. Chemical Changes (8 hrs) Chemical changes can be represented with chemical equations and energy is involved in each change that matter undergoes. The five types of reactions are investigated and predictions of products are demonstrated. Mole ratios are used to reinforce the law of conservation of mass.
3. Part of - Stoichiometry (32 hrs) Gravimetric, Solution, and Gases Applications of predicting both reactant and product quantities is demonstrated. Experimentation is used to reinforce this concept. Limiting reagents are identified using molar ratio. Percent yield is also calculated based on results both theoretically and experimentally. Gas stoichiometry explores the ideal gas law when calculating unknown variables with respect to chemical changes. When dealing with individual gases, the combined gas law is used when there is a change in conditions of pressure, volume and/or temperature.

### **COURSE EXPECTATIONS (Role of student)**

In order to be successful in Chemistry 112, in addition to completing assignments, **homework (30 minutes/night)** and projects, you will need to bring the following to class each day: textbook, scientific calculator, pencil and notebooks (binder for day to day work).

### **COURSE TEXTBOOKS AND MATERIALS**

Text: Prentice Hall Chemistry

Required Materials:

- Pencils, pens, and erasers
- Binder with lined paper, graph paper and dividers
- Ruler
- Scientific or Graphing Calculator

### **Mark Distribution:**

#### **Midterm Grade**

70% Class Work  
30% Midterm Exam

#### **January Grade**

60% Class Work  
40% Final Exam

**Your final grade will consist of 40% of your midterm grade and 60% of your January grade.**

### **INTERNET SITES**

Blog:

<http://svchemistry.edublogs.org>

School Site:

<http://svhs.nbed.nb.ca/>

Moodle Site (Intranet):

<http://d143106moodle01/>

### **EXTRA HELP PLAN**

I will be available by appointment at noon hour or after school on most days. Please note that my supervision schedule will affect my availability during noon hour and after school, but don't hesitate to contact me to arrange a suitable time.

Note: Deadlines, plagiarism, procedures & routines, classroom expectations, attendance, exemptions, homework, etc. are covered in the student agenda.

Student Name: \_\_\_\_\_ Student Signature: \_\_\_\_\_

Parent Signature: \_\_\_\_\_ Parent E-mail: \_\_\_\_\_