

LISGAR COLLEGIATE INSTITUTE



DEPARTMENT: Science

COURSE NAME: Chemistry, Grade 12, University Preparation

COURSE CODE: SCH 4U and SCH 4UG

OVERVIEW

This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.

COURSE CONTENT

Organic Chemistry
Energy Changes and Rates of Reaction
Chemical Systems and Equilibrium
Electrochemistry
Structure and Properties

OVERALL CURRICULUM EXPECTATIONS

By the end of this course, students will:

- demonstrate an understanding of the structure of various organic compounds, and of chemical reactions involving these compounds;
- investigate various organic compounds through research and experimentation, predict the products of organic reactions, and name and represent the structures of organic compounds using the IUPAC system and molecular models;
- evaluate the impact of organic compounds on our standard of living and the environment.
- demonstrate an understanding of the energy transformations and kinetics of chemical changes;
- determine energy changes for physical and chemical processes and rates of reaction, using experimental data and calculations;
- demonstrate an understanding of the dependence of chemical technologies and processes on the energetics of chemical reactions.
- demonstrate an understanding of the concept of chemical equilibrium, Le Chatelier's principle, and solution equilibria;
- investigate the behaviour of different equilibrium systems, and solve problems involving the law of chemical equilibrium;
- explain the importance of chemical equilibrium in various systems, including ecological, biological, and technological systems.
- demonstrate an understanding of fundamental concepts related to oxidation-reduction and the interconversion of chemical and electrical energy;
- build and explain the functioning of simple galvanic and electrolytic cells; use equations to describe these cells; and solve quantitative problems related to electrolysis;
- describe some uses of batteries and fuel cells; explain the importance of electrochemical technology to the production and protection of metals; and assess environmental and safety issues associated with these technologies.

- demonstrate an understanding of quantum mechanical theory, and explain how types of chemical bonding account for the properties of ionic, molecular, covalent network, and metallic substances;
- investigate and compare the properties of solids and liquids, and use bonding theory to predict the shape of simple molecules;
- describe products and technologies whose development has depended on understanding molecular structure, and technologies that have advanced the knowledge of atomic and molecular theory.

LEARNING SKILLS

The development of sound learning skills is essential to the success of our students. Teachers and students will work together to understand and further the development of student learning skills in the areas of initiative, work habits, organization, team work, and independent work. Teachers report on learning skills on the midterm and final report cards.

ASSESSMENT METHODS

Students' understanding of the course material will be assessed and evaluated using unit tests, quizzes, in-class and take-home assignments, lab activities and reports, a summative project, and a final exam. Marks from the various assignments will be broken down and recorded in the following categories. Please refer to the Lisgar Assessment and Evaluation Policy.

EVALUATION

Course Work (70%)

1. Application	10 %
2. Knowledge/Understanding	25 %
3. Communication	10 %
4. Thinking/Inquiry/Problem Solving	25 %

Summative (10%)

Summative Due Date(s): week of December 15, 2008

Exam (20%)

The final exam will cover the entire course.

ATTENDANCE

If you are absent from class, you are expected to catch up what you missed and complete any relevant homework. When you return to class, you must show your teacher an Absence Verification Form.

If you know in advance that you will be absent for a test, please see your teacher **before** the scheduled test date to arrange an alternate time to write it.

If you are unexpectedly absent for a valid reason on the day of a scheduled test, please let your teacher know why. When you return to class, remember to show an Absence Verification Form from your homeroom teacher and a note from your parents indicating that they are aware you missed the test. An **unjustified absence** for a test may result in a **mark of zero**.

SUPPLEMENTARY NOTES

Text: Nelson Chemistry 12 (Thomson Nelson)

Each Student will be assigned a textbook. If it is lost or damaged, the replacement cost is \$119.12.

Texts are to be covered with sturdy paper.

Prerequisite: Chemistry, Grade 11, University Preparation

Homework:

The importance of regular completion of homework cannot be overemphasized.

* Record homework assignments in your agenda at the end of each class.

* Homework must be completed before the end of next day's class.

Extra help: See your teacher about arranging a mutually convenient time for extra help.

Please see page 25 in the Lisgar Student Planner under the heading "Extra help In A Subject".