R.H. KING ACADEMY SCIENCE DEPARTMENT
COURSE OUTLINE AND EVALUATION
GRADE 12 UNIVERSITY CHEMISTRY

COURSE 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.

Prerequisite: Chemistry, Grade 11, University Preparation **Credit Value:** 1.0

TOPICS OF STUDY

Energy Changes and Rates of Reaction

In this unit students will:

- 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.

Electrochemistry

In this unit students will:

- demonstrate an understanding of fundamental concepts related to oxidation-reduction and the inter-conversion 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 and explain the importance of electrochemical technology to the production and protection of metals.

Organic Chemistry

In this unit 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.

Chemical Systems and Equilibrium

In this unit students will:

- demonstrate an understanding of the concept of chemical equilibrium and Le Chatelier's principle, and
- investigate the behaviour of different equilibrium systems, and solve problems involving the law of chemical equilibrium.

Structure and Properties

In this unit students will:

- 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 an examination of some of their uses;
- describe products and technologies whose development has depended on understanding molecular structure, and technologies that have advanced the knowledge of atomic and molecular theory.

COURSE TEXTBOOK: Nelson Chemistry 12 **Replacement Cost:** $ 90

MATERIALS REQUIRED: binder, loose leaf paper, pens, pencils, eraser, ruler, calculator, graph paper

CALCULATION OF MARKS

Your final mark in Chemistry will be calculated as follows:

Test	25 %
Lab	20 %
Quiz/Assignment	15 %
ISU	10 %
Final Exam	30 %

Student work will be assessed and/or evaluated in a BALANCED manner with respect to the FOUR categories, and that achievement of particular expectations will be considered within the appropriate categories

Knowledge and Understanding

- understanding of concepts, principles, laws, and theories (e.g. identifying assumptions, eliminating misconceptions, providing explanations)
- knowledge of facts and terms
- transfer of concepts to new contexts
- understanding of relationships between concepts

Thinking and Inquiry

- application of the skills and strategies of scientific inquiry (e.g. initiating and planning, performing and recording, analysing and interpretation, problem solving)
- application of technical skills and procedures
- use of tools, equipment and materials

Communication

- communication of information and ideas: use of scientific terminology, symbols, conventions and standard (SI) units, communication for different audiences and purposes
- use of various forms of communication (e.g. reports, essays)
- use of information technology for scientific purposes

Application and Making Connections

- understanding connections between science, technology, society and the environment
- analysis of social and economic issues involving science and technology
- assessment of impacts of science and technology on the environment
- proposing courses of practical action in relation to science and technology based problems

CLINIC

All students can benefit by attending clinic periods when they feel they need extra help. You may be required to commit to clinic with your Chemistry teacher based on marks, completion of work, disciplinary needs, or teacher request.

CHEATING AND PLAGIARISM

It is expected that all students at R.H. King Academy will practice academic honesty and build this into their career philosophies. They must acknowledge any input from peers, parents and secondary sources. Information gathered from the Internet is considered a secondary source. To submit any work that is not completely their own is considered plagiarism. “Loaning” completed work to other students is considered to be cheating.

Cheating will result in a mark of zero and may result in suspension and/or loss of credit.