

CHEMISTRY 12

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Objective

To develop the attitudes, skills, and knowledge necessary for scientific literacy by working and communicating scientifically, practicing scientific inquiry, thinking critically and creatively, and acting with personal and social responsibility.



Course Description

For a detailed breakdown of B.C.'s new curriculum "Building Student Success" please refer to the Ministry website @ curriculum.gov.bc.ca.

Curricular Competencies

- Questioning and Predicting
- Planning and Conducting
- Processing and Analyzing data and information
- Communicating
- Applying and Innovating
- Evaluating

Big Ideas

- Reactants must collide to react.
- Conditions surrounding a reaction determine its rate.
- Some chemical reactions are reversible and proceed to equilibrium.
- Dynamic equilibrium can be altered by changing the surrounding conditions.
- Saturated solutions are systems in equilibrium.
- The strength of an acid or base depends on the degree of dissociation of its ions.
- Weak acids, weak bases and buffers are systems in equilibrium.
- Reduction and oxidation are complementary processes that involve the gain or loss of electrons.
- Redox reactions have implications for resource development and for the environment.

Content

Reaction Kinetics

Factors influencing Reaction Rates, Collision Theory, Reaction Mechanisms, Potential and Kinetic Energy, Enthalpy, Effects and Applications of Catalysts

Dynamic Equilibrium

The Nature of Equilibrium, The Effects of Enthalpy and Entropy, Le Chatelier's principle, Catalysts, K_{eq} , Quantitative Problem Solving

Solubility Equilibrium

Saturated Solutions, K_{sp} , Quantitative Problem Solving

Acids and Bases

Arrhenius v.s. Bronsted-Lowry Theory, Relative Strengths, K_w , K_a , K_b , pH, pOH, Indicators and Titrations, Hydrolysis of Salts, Buffers, Quantitative Problem Solving, Applications and Implications of acid/base reactions

Oxidation-Reduction

The Redox process, Oxidizing and Reducing Agents, Relative strengths, Titrations, Electrochemical Cells, Electrolytic Cells, Quantitative Problem Solving, Practical Applications

Classroom Responsibilities

Successful students...



- ☑ *Attend class daily.*
- ☑ *Arrive on time and are prepared to participate bringing the required materials.*
- ☑ *Actively participate in lessons and use class time constructively.*
- ☑ *Complete all assignments, to the best of their ability, and submit them on time.*
- ☑ *Respect a working and learning environment for both staff and students.*
- ☑ *Practice safe lab procedures to maintain personal and peer safety.*
- ☑ *Use personal electronic devices responsibly and respectfully.*

Resource Materials

Three Ring Binder, Lined Paper, Graph Paper, Dividers, Pencil Case, Scientific Calculator, Pencils, Eraser, Pens, Ruler (15 cm), Scissors, Pencil Crayons, Glue Stick, Face Masks, Small bottle of unscented hand sanitizer, Personal Electronic Device for use with Microsoft Teams

NOTE: All students are required to wear goggles during lab activities. Goggles will be provided for student use and are cleaned between classes, however many students prefer to purchase their own pair. If you choose to do so, please ensure the goggles in which you invest are CSA approved.

Attendance

When you are absent, please have your parents/guardians notify the school of your absence and your reason via email (argyle@sd44.ca) or telephone message (604-903-3314) as soon as possible. It is your responsibility to make up any missed work. Be sure to follow-up with me directly on Teams to make arrangements to access work, write tests or submit assignments. Patterns of absence may result in a failing grade.

Assessment and Evaluation

The work of students will be evaluated in a variety of ways:

- *Formative assessment* will be used to monitor student learning in order to modify teaching and learning strategies with the goal of improving student mastery.
- *Summative assessment* will be used to evaluate skill acquisition, student learning and mastery of specific content areas in order to summarize student development at a particular time.
- *Performance based assessment* uses a set of criteria that require students to demonstrate their knowledge and skills, including the manner in which they solve problems. Performance based assessment will be used to measure how well students can apply what they know, often to real-world situations.



Students may be given the opportunity to redo and resubmit assignments that do not meet the required criteria.

Marks will be cumulative for the entire semester and may include an in-class midterm in addition to a final.

Assignment completion, ongoing study and review, and an organized notebook are keys to success in Chemistry 12.