**Coquitlam College**
Brookmere Secondary

**Course:** Chemistry 12

**Course Description:** Students will know:
This course is designed to provide students with a comprehensive understanding of the fundamental principles and concepts of chemistry. They will enhance their analytical reasoning, problem-solving skills, experimental techniques, and ability to communicate scientific concepts by exploring topics such as reaction rates, equilibrium, solubility, acids and bases, and electrochemistry.

**Big Ideas:** By the end of this course, students will understand:
**Reaction Kinetics**

- Reactants must collide with sufficient energy and geometry to react.
- Conditions surrounding a reaction determine its rate.

**Dynamic Equilibrium**

- Some chemical reactions are reversible and proceed to equilibrium.
- Dynamic equilibrium can be altered by changing the system's conditions.

**Saturated Solutions**

- Saturated solutions are in equilibrium.
- Changes in temperature, pressure, or the addition of more solute can shift the equilibrium.
- Understanding saturated solutions helps explain solubility, crystallization, and chemical Equilibrium.

**Acid-Base 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.

**Electrochemistry**

- Reduction and oxidation are complementary processes that involve the gain or loss of electrons.
- Redox reactions and implications in resource development and for the environment.

**Core Competencies**:
**Communication**

- Use appropriate scientific terminology and representations to explain concepts and theories ensuring clarity in both oral and written communication.
- Analyze experimental results, draw conclusions, and present findings in a clear and structured manner, utilizing various scientific formats such as graphs, written reports, and presentations.
- Work effectively in groups, sharing ideas and solutions, and contributing to discussions that explore chemical principles and experimental outcomes.

**Thinking**

- Interpret and evaluate scientific data, apply critical thinking to draw conclusions and make predictions based on chemical principles.
- Use logical reasoning to solve complex problems, considering multiple variables and applying concepts from chemistry to find effective solutions.

- Plan, conduct, and assess experiments with a focus on accuracy ensuring the reliability of results and conclusions.
- Assess the validity of experimental data, using critical thinking to determine the relevance and implications of the evidence.
- Relate chemical principles to real-world applications, understanding the broader impact of scientific knowledge.

**Personal & Social**

- Follow safety protocols and ethical guidelines during laboratory work, ensuring responsible handling of chemicals and adherence to proper procedures.
- Actively engage with peers in solving complex problems, sharing perspectives, and contributing to a shared understanding of scientific concepts.
- Evaluate understanding of key scientific principles, identify areas for improvement, and set personal learning goals to enhance academic and practical skills.

**Resources:** Hebden Workbook**,** Heath Chemistry Laboratory Experiments Book, Data Booklet, Scientific Calculator

**Assessment:**
Formative
Think-Pair-Share, Concept Checks, Self-Assessments, Whiteboard Practice, Collaborative Worksheets, Reflective Questioning, Pre-Lab Questions

Summative
Unit Tests, Research Project, Midterm and Final Exam, Lab Reports

**Evaluation:**

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|---|---|
| Quizzes | 15% |
| Mid-Term Exam | 25% |
| Final Exam | 25% |
| Labs | 25% |
| Project | 10% |
| Total | 100% |

*Please note that Assessment and Evaluation weights may be changed. Students will be informed of any changes ahead of time.*
With respects to the First People's Principles of Learning, students may be alternatively assessed in ways that people can display knowledge and subject mastery. The alternative assessment can be storytelling, art or other expressions of self, knowing and learning.

- Learning involves recognizing the consequences of one‘s actions.
- Learning involves generational roles and responsibilities.

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**Expectations:**

- Be sure to check MyCC regularly for updates and announcements related to the course.
- Always follow all lab safety rules and procedures.
- Actively participate in class discussions, group work, and lab activities.
- Complete all assignments and homework on time.
- Always exhibit responsible, cooperative, and respectable behavior
- Avoid plagiarism and maintain academic honesty in all assignments and labs.