

Course: Chemistry 12

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Course Description

Chemistry 12 is a foundational course for future studies in science, engineering, healthcare, and other career choices. Chemistry 12 builds on the information learned in Chemistry 11. This is a math-based course and thus a student needs to be able to work with scientific notation in calculations. Their calculator must be able to perform log-based mathematics. Topics studied include reaction rates, equilibrium, strength of acids and bases, and reduction/oxidation reactions.

Detailed Learning Outcomes can be viewed at the British Columbia Ministry of Education site at

<https://curriculum.gov.bc.ca/curriculum/science/12/chemistry>

Summer Learning Beliefs

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty Policy
- adhere to the *Summer Learning* Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and participate to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at: <https://www.sd44.ca/school/summer/policies/Pages/default>.

Course Syllabus

Conceptual Understandings	Curricular Competencies	Content	Assessment
Reaction Rates and Kinetics	<ul style="list-style-type: none">• Safety in the lab• Analyze trends in data• Analyze cause and effect in data• Formulate models to describe a phenomenon	<ul style="list-style-type: none">• How can one increase or reduce the speed of a chemical reaction?• How does a catalyst work to increase the rate of reaction?	<ul style="list-style-type: none">• Formative assessment• Written evaluation

Equilibrium	<ul style="list-style-type: none"> • Use appropriate technology and equipment to collect and record data • Use calculations to determine outcome 	<ul style="list-style-type: none"> • How does amount produced affect the equilibrium point? • How do equilibrium reactions affect the environment? 	<ul style="list-style-type: none"> • Formative Assessment • Summative Evaluation
Solubility	<ul style="list-style-type: none"> • Communicate scientific information and ideas in a concise manner 	<ul style="list-style-type: none"> • How much solute can a solution contain? 	<ul style="list-style-type: none"> • Demonstrate Lab Techniques • Formative Assessment
Acids and Bases	<ul style="list-style-type: none"> • Plan, select and use appropriate investigation methods • Demonstrate awareness of assumptions and modelling errors • Address environmental issues • Use appropriate significant figures and scientific notation when calculating 	<ul style="list-style-type: none"> • Determine pH using logarithmic calculations • How do pH and pOH relate? • Common pH uses • Differences between strong acid and weak acid titrations 	<ul style="list-style-type: none"> • Demonstrate lab techniques and written summary of lab findings • Formative Assessment • Written evaluation
Reduction and Oxidation	<ul style="list-style-type: none"> • Demonstrate intellectual curiosity about science 	<ul style="list-style-type: none"> • How are reduction and oxidation equations balanced? • How are metals purified or electroplated? • Chemistry of batteries 	<ul style="list-style-type: none"> • Formative Assessment • Oral evaluation

Grade Boundaries

An “A” student can:

- demonstrate and apply curricular competencies
- Analyze information and synthesize the correct solution
- Apply the course concepts to contextualized situations
- Demonstrate computational accuracy
- Solve challenging questions without step-by-step instruction

A “B” student can:

- Demonstrate and sometimes apply curricular competencies
- Analyze information and synthesize the solution
- With help, identify complex patterns with the context of a problem
- Demonstrate computational knowledge
- Solve challenging questions when given direction

A "C" student can:

- Demonstrate the curricular competencies
- Organize information and attempt to find the solution
- Identify patterns with the context of the problem
- Build on learned concepts within the context of a larger situation
- Solve routine step-by-step problems

Resources

Resources
Hebden Chemistry 12
Scientific Calculator