



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.

Inquiry Questions

- How can one increase or reduce the speed of a chemical reaction?
- How much solute can a system at equilibrium contain?
- How is pH calculated? How can this knowledge be used to design household and domestic systems?
- How is metal refined?
- Why are many batteries lithium based?

Course Syllabus

- Safety in the Lab
- Reaction Rates
 - What factors determine the rate of reaction
 - How can a reaction rate be increased or decreased
 - How does a catalyst work to increase the rate of reaction
- Chemical Equilibrium
 - How much solute can a solution contain
 - How can solubility be increased
 - Chemical equilibrium in the environment
- Acids and Bases
 - How is pH calculated
 - How do pH and pOH relate
 - Examples of pH use

- Titrations based on neutral pH endpoint
- Reduction and Oxidation Reactions
 - Classifying reactions and predicting products
 - Purifying metals
 - Electroplating
 - Chemistry of batteries
- Gas Laws (additional unit)
 - Using equations to calculate gas pressure, temperature and amount of material

Detailed Learning Outcomes can be viewed at:

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

Lab Reports

Labs are an important part of Chemistry 12 and each lab report is written with the following categories. A more detailed outline will be distributed in class.

- Purpose
- Materials List (exceptions only)
- Procedure (cite references and note exceptions)
- Data and Observations – includes all data tables
- Calculations and Questions
- Error Analysis
- Conclusion

Classroom Expectations

As with all courses, students are expected to attend all classes, arrive on time, behave respectfully towards staff and other students, actively participate in the lessons and work to the best of their ability. Please note that students with unexplained absences for tests or quizzes will receive a mark of zero until I contact a parent or guardian. Students should also be aware of the Seycove Code of Conduct in regards to plagiarism. I consider allowing others to copy your work as cheating and thus both the student copying the work and the one allowing his or her work to be copied will receive a reduced mark. Students working in an unsafe manner during a lab session will be asked to leave the lab and receive a mark of zero.

All students are expected to bring either a scientific or graphing calculator to class each day. Normal supplies such as a pencil, paper and textbook are also required each day. Students wishing to complete their work on a computer are welcome to do so. Only computer-based students should submit their work in a typed form. All other students should submit hand-written labs and assignments. Computer-based students found playing computer games in class lose the privilege to work on a computer. Students found using technology inappropriately will be asked to put the technology away. In extreme cases, they will forfeit their technology for the remainder of the class.

Course marks are calculated as follows.

Tests	40%
Quizzes	20%
Labs	15%
Assignments	10%
Final Exams	15%

All quizzes are formative as long as a student maintains a “G” level of work habits. This means that one quiz mark per unit can be upgraded if the test mark for that unit is higher than the quiz mark. In order to avoid having all academic exams during one week of June, the final exams are written before the students start the last unit.

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

The textbook is BC Science Chemistry 12. Students may purchase a copy for \$25 to use as both a textbook and a workbook. If you do not write in the book, you can borrow one without paying. We also have a number of the older textbook, Hebden Chemistry 12, available to borrow or purchase.

Finally, let me say how much I enjoy being a Seycove teacher. It is a blessing to work with such dedicated students and amazing individuals. You make a difference in each other’s lives and the community.