

Chemistry 11

Instructor: Cecilia He

Email: cecilia.he@pattisonhighschool.ca

Schedule: Monday- Friday 8:45 am – 10:15 am (8:45am – 10:00 am Wednesday)

Room: 109

Course Description

Chemistry is the branch of science concerned with matter – the stuff that has mass and occupies space. Chemistry 11 offers a broad introduction to chemistry. You will study the composition and properties of matter, and the changes that matter undergoes.

The four big ideas covered in Chemistry 11 include:

- **Atoms and molecules are the fundamental building blocks of matter.**
 - How does the quantum mechanical model extend our understanding of the atom?
 - Why is fluorine the most electronegative element?
- **Organic chemistry** and its applications have significant implications for human health, society, and the environment.
 - How do organic compounds differ in structure and properties?
 - How is carbon the basis for all living things?
 - How do the structure and geometry of organic compounds contribute to their usefulness in medicine?
- The **mole** is a quantity used to make atoms and molecules measurable.
 - How could you demonstrate Avogadro's hypothesis?
 - How does a mole compare to other units of measure?
- Matter and energy are conserved in **chemical reactions**.
 - How could you measure negative and/or positive impacts of chemical reactions on human health, society, and the environment in your local community?
 - How can you observe the conservation of mass and energy in chemical reactions you encounter in your everyday life?
 - How do lab techniques contribute to safety?
- **Solubility** within a solution is determined by the nature of the solute and the solvent.
 - How does the bent shape of the water molecule cause polarity?
 - Why do some materials dissolve in water or other liquids, but others do not?

To be successful in this course a student should have strong mathematics skills and problem-solving abilities as there is an emphasis on applying mathematics to solving problems. Remember, to achieve success in Chemistry 11, like in all courses, you must invest time and effort to learn and practice course material. A few tips for helping you succeed are:

- Review daily and work through lots of problems. You can NEVER do enough problems. Remember to practice perfect - do not practice bad habits. Keep an eye on the significant figures, units and ion CHARGES all of the time!
- Start preparing early for tests, quizzes and exams. Summarize you notes, practice additional problems and try some of the supplied links.
- Get help early

Resources

The text used in this course is Hebden: Chemistry 11 A Workbook for Students. This text is very useful and will help you gain confidence with the material in this course.

Evaluation: Cumulative/ Summative

Assignment	10%
Quizzes	20%
Labs	20%
Major Assignment	10%
Unit Test	25%
Final Exam	15%

****Any student caught cheating on homework, assignments, or tests will receive a 0 on the work. A second incident of cheating will result in parents and the principal being contacted****

*****Any student with an unexcused absence on the day of a test or quiz, will receive a mark of zero unless a note is provided from a parent/guardian, excusing the student from the missed class*****

Expectations:

Homework

I will check homework at the beginning of each class. I will give you one of the following marks.

0 --- incomplete, copied, or poor effort

5 --- complete, but poorly done OR about half of the questions are complete

10 --- a good effort was put into the homework, most of the questions are completed

Quizzes

I will have short quizzes about 2 or 3 times each week. The quizzes are for me to check your understanding, and for you to practice what you have learned.

Labs

Experiments are important learning tools for chemistry and necessary for the scientific process. Lab are worth many marks, and any labs you miss will have to be made up as soon as possible. Experiments will be done together in small groups, however, I need to see every member working equally. Also, laboratory reports must be written individually (see section on cheating and plagiarism).

Cell Phones and Technology in the Classroom

Please hand in your cell phone before the class begins. You are allowed to use it when you told to do so.

I expect to have your full attention during class, just like you expect to have my full attention when talking to me.

Cheating and Plagiarism

Plagiarism and cheating will NOT be tolerated. First offence everyone involved gets zero. Second offence everyone involved will be asked to leave the course. I will often ask you to work together, but you cannot copy each other's work. When working together, you must show all your work and have individual responses to questions. In particular, Lab Reports will have the same raw data, however, you do the steps of the calculations, data manipulation, and analysis yourself.

And most importantly: Own your learning. At the end of the day, **YOU** are the one who controls your success in this course. Stay on top of your work, recognize when you need to ask for help, and give it your all.

Course Schedule

UNIT	Section	Estimated Time
Unit 1 Introduction to Chemistry	Science and Chemistry Scientific Method Lab Safety The International System of Units Dimensional Analysis Scientific Notation Significant Figures and Rounding Periodic Table Matter Characteristics of Matter Mixtures	2.5 weeks
Unit 2 Atoms, Molecules, and Ions	History of Elements and Compounds Atoms, Molecules and Ions Fundamental Laws of Chemistry Combining Capacity and Naming Compounds Multivalent Metals and Polyatomic Ions Writing the Formula of a Compound Compounds with Hydrates Naming Acids	1 week
Unit 3 The Mole Concept	Atomic Mass The Mole Characteristics of Gases Molar Volume of a Gas Molar Volume and Molar Mass More on Molar Mass Percent Composition Empirical Formula Molecular Formula Molar Concentration Solutions and Dilutions	2.5 weeks
Unit 4 Chemical Reactions	Chemical Equations Balancing Equations Types of Chemical Reactions Energy Stoichiometry Limiting Reagents	1.5 weeks

	Percent Yield	
Unit 5 Atomic Theory	The Atomic Model The Atom Periodic Table Trends Representative Elements Periodic Table Groups 13-16 Transition Elements Orbitals Energy Levels Valence Electrons, Combining Capacity and Electron Dot Diagrams Ionic and Covalent Bonds Lewis Diagrams	3.5 weeks
Unit 6 Solution Chemistry	Mixtures and Solutions Polarity in Molecules Electrolytes Electrolytes and Solutions	1.5 weeks
Unit 7 Organic Chemistry	Names, Structures, Geometry Applications of Organic Chemistry	2 weeks
Final Review		1 week