

Course: Chemistry 11

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Chemistry 11 is an introduction into the field of chemistry that focusses primarily on the nature of matter. Throughout the course, students will learn the fundamental skills related to chemical reactions, atomic theory, solution chemistry, and the mole. Much of the course material is calculation based, and a good working knowledge of the chemistry topics covered in Science 8, 9, and 10 will be essential to success. The nature of chemistry is sequential; that is, students build on concepts learned previously.

Inquiry Questions:

- How do bonding and atomic structure relate to the reactivity of substances?
- How do your laboratory observations support what you know about the behavior of matter?
- How do stoichiometry and mathematical calculations impact the quantities of particles involved in chemical reactions?

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 performance task, project, essay, presentation, test, etc.
Mathematical Methods in Chemistry	<ul style="list-style-type: none"> Processing and analyzing data and information. Evaluating 	<ul style="list-style-type: none"> Significant Figures Metric and Non-Metric unit conversions using dimensional analysis Uncertainty and Error in data 	<ul style="list-style-type: none"> Performance tasks, analysis of given data, quizzes, tests.
Periodicity and Reactivity Trends	<ul style="list-style-type: none"> Questioning and predicting Processing and analyzing data and information 	<ul style="list-style-type: none"> Periodic table Subatomic structure of atoms, ions and isotopes Chemical and physical properties of the elements Periodicity Trends in the properties of elements Electronegativity, polarity and bonding 	<ul style="list-style-type: none"> Performance tasks, analysis of given data, quizzes, tests.
Chemical Reactions	<ul style="list-style-type: none"> Questioning and predicting Planning and conducting Processing and analyzing 	<ul style="list-style-type: none"> predicting products, reactants and energy changes (ΔH) First Peoples traditional 	<ul style="list-style-type: none"> Performance tasks, analysis of given data, virtual laboratory demonstrations, quizzes, tests.

	<ul style="list-style-type: none"> • data and information • Evaluating 	practices (e.g., tanning hides; preparation of food, soap, and natural bleach), smelting, pulp and paper production, food chemistry, photosynthesis and cellular respiration, development of petrochemical smog	
The Mole	<ul style="list-style-type: none"> • Questioning and predicting • Planning and conducting • Processing and analyzing data and information • Evaluating 	<ul style="list-style-type: none"> • The concept of the mole as 6.022×10^{23} particles, and how this leads to quantitative analysis of chemical reactions in an accurate, relatable manner • Molar mass, molarity 	<ul style="list-style-type: none"> • Performance tasks, analysis of given data, virtual laboratory demonstrations, completion of a pre-recorded experiment, quizzes, tests.
Stoichiometry	<ul style="list-style-type: none"> • Questioning and predicting • Planning and conducting • Processing and analyzing data and information • Evaluating 	<ul style="list-style-type: none"> • mass • number of molecules • gas volumes • molar quantities • excess and limiting reactants • molarity • dilution effect • concentration of ions in solution when two solutions are mixed 	<ul style="list-style-type: none"> • Performance tasks, analysis of given data, virtual laboratory demonstrations, completion of a pre-recorded experiment, inquiry project with presentation quizzes, tests.

		<ul style="list-style-type: none"> • solubility and precipitation • dissociation of ions, dissociation equations • development of sustainable processes and technologies that reduce negative impacts on the environment (e.g., reducing toxicity, designing benign solvents, increasing energy efficiency) 	
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Grade Boundaries:

An “**A**” student will/can....

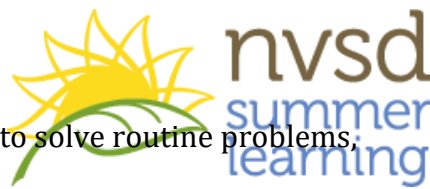
Produce high-quality, frequently innovative work. Communicate scientific ideas to connect and synthesize concepts and skills learned over time. Consistently demonstrate sophisticated critical and creative thinking. Collect, present, and (correctly) transform experimental data. Interpret, analyze and critique scientific findings and experimental data. Frequently transfers knowledge and skills and use concepts to solve non-routine problems.

A “**B**” student will /can ...

Sometimes produces high-quality, innovative work. Communicate scientific ideas to compare and critique concepts and skills learned over time. Consistently demonstrate a degree of critical and creative thinking. Collect and present scientific data in an appropriate manner. Assess, interpret, and revise scientific findings and experimental data. Transfer knowledge and skills and use concepts to consistently solve routine problems correctly with few mistakes.

A “**C**” student will /can ...

Produce work of an acceptable quality. Communicate a basic understanding of scientific concepts and operate superficially within a scientific contextual framework. Display an emergent level of application when it comes to critical thinking skills. Collect scientific data in an appropriate manner. Be inflexible in the use of knowledge and skills, requiring support even in familiar classroom



situations. Make attempts to use knowledge, skills and scientific concepts to solve routine problems, with occasional mistakes.

Resources:

Resources
Hebden Chemistry 11: A Workbook for Students