

Science 8/9 Long Range Plans (Science 9 curriculum)

Neufeld – 2011/2012

Goals and objectives of the science 9 curriculum:

- Encourage students to develop a critical sense of wonder and curiosity about scientific and technological endeavors
- Enable students to use science and technology to acquire new knowledge and solve problems, so that they may improve the quality of their own lives and the lives of others
- Prepare students to critically address science-related societal, economic, and environmental issues
- Provide students with a foundation in science that creates opportunities for them to pursue progressively higher levels of study, prepares them for science-related hobbies appropriate to their interests and abilities
- Enables students, of varying aptitudes and interests, to develop a knowledge of the wide spectrum of careers related to science, technology, and the environment

Unit A: Biological Diversity
September 2011 – October 2011

Curricular Outcomes	<ul style="list-style-type: none"> • Investigate and interpret diversity among species and within species, and describe how diversity contributes to species survival • Investigate the nature of reproductive processes and their role in transmitting species characteristics • Describe, in general terms, the role of genetic materials in the continuity and variation of species characteristics; and investigate and interpret related technologies • Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making 		
Resources	<ul style="list-style-type: none"> • Science in Action textbook • Science in Focus • Microscopes • Learn Alberta website • Explore learning website • Computer Lab 	Instructional Approaches	<ul style="list-style-type: none"> • Lecture • Labs • Readings • Concept Maps • Research • Student Reviews
Activities	<ul style="list-style-type: none"> • Classification Find • Symbiosis Card Activity • Gizmos • Variation Lab • DNA model making • Showing the Relationship • Genetic Possibilities Lab • Maintaining Local Biological Diversity Research Project 	Evaluation	<ul style="list-style-type: none"> • Lab Reports • Assignments • Research Projects • Quizzes (section one, two, and three) • Unit Final Exam

Unit B: Matter and Chemical Change

October 2011 – December 2011

Curricular Outcomes	<ul style="list-style-type: none"> Investigate materials, and describe them in terms of their physical and chemical properties Describe and interpret patterns in chemical reactions Describe ideas used in interpreting the chemical nature of matter, both in the past and present, and identify example evidence that has contributed to the development of these ideas Apply simplified chemical nomenclature in describing elements, compounds and chemical reactions 		
Resources	<ul style="list-style-type: none"> Science in Action textbook Science in Focus Learn Alberta website Explore learning website Computer Lab Variety of Chemicals and Lab Equipment 	Instructional Approaches	<ul style="list-style-type: none"> Lecture Labs Readings Concept Maps Research Student Reviews
Activities	<ul style="list-style-type: none"> Identifying Mystery Substances Investigating Physical and Chemical Changes Atomic Timeline Research Atomic Model Making Modeling Ionic Compounds Modeling Molecular Compounds Observing Chemical Reactions Metal Contamination of the Environment 	Evaluation	<ul style="list-style-type: none"> Lab Reports Assignments Research Projects Quizzes (section one, two, three, and four) Unit Final Exam

Unit C: Environmental Chemistry

January 2012 – February 2012

Curricular Outcomes	<ul style="list-style-type: none"> Investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things Identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment 		
Resources	<ul style="list-style-type: none"> Science in Action textbook Science in Focus Learn Alberta website Explore learning website Computer Lab Various Chemicals and Equipment 	Instructional Approaches	<ul style="list-style-type: none"> Lecture Labs Readings Concept Maps Research Student Reviews
Activities	<ul style="list-style-type: none"> Measuring Acids and Bases How Does Oxygen Get Into the Water? Analyzing Carbon Dioxide Measurements Burry Your Garbage A Refinery Mega Project 	Evaluation	<ul style="list-style-type: none"> Lab Reports Assignments Research Projects Quizzes (section one, two, and three) Unit Final Exam

Unit D: Electrical Principles and Technologies

February 2012 – April 2012

Curricular Outcomes	<ul style="list-style-type: none"> Investigate and interpret the use of devices to convert various forms of energy to electrical energy, and electrical energy to other forms of energy Describe technologies for transfer and control of electrical energy Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions Describe and discuss the societal and environmental implications of the use of electrical energy 		
Resources	<ul style="list-style-type: none"> Science in Action textbook Science in Focus Learn Alberta website Explore learning website Computer Lab Wires, bulbs, switches, etc... 	Instructional Approaches	<ul style="list-style-type: none"> Lecture Labs Readings Concept Maps Research Student Reviews
Activities	<ul style="list-style-type: none"> Investigating Static Electricity Using Voltmeters Choosing Electrolytes What's the Resistance? Wiring a Secure and Safe Home Get Your Motor Running Kettle Efficiency Project: Building An Electrical Device 	Evaluation	<ul style="list-style-type: none"> Lab Reports Assignments Research Projects Quizzes (section one, two, and three) Unit Final Exam

Unit E: Space Exploration

April 2012 – June 2012

Curricular Outcomes	<ul style="list-style-type: none"> Investigate and describe ways that human understanding of Earth and space has depended on technological development Identify problems in developing technologies for space exploration, describe technologies developed for life in space, and explain the scientific principles involved Describe and interpret the science of optical and radio telescopes, space problems, and remote sensing technologies Identify issues and opportunities arising from the application of space technology, identify alternatives involved, and analyze implications 		
Resources	<ul style="list-style-type: none"> Science in Action textbook Science in Focus Learn Alberta website Explore learning website Computer Lab Measuring devices 	Instructional Approaches	<ul style="list-style-type: none"> Lecture Labs Readings Concept Maps Research Student Reviews
Activities	<ul style="list-style-type: none"> How Big is the Sun? Solar System Model Where Do We Look? 	Evaluation	<ul style="list-style-type: none"> Lab Reports Assignments Research Projects

	<ul style="list-style-type: none"> • Stabilizing Rocket Flight • Designing a Solar Sail-Powered Spacecraft • How Far Is It? • Should We Continue Investing in Space Exploration and Research? • Project: Mission to Mars 		<ul style="list-style-type: none"> • Quizzes (section one, two, three, and four) • Unit Final Exam
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Course Review

June 2012

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June 22, 2012

Assessment:

A variety of assessment techniques will be used in the classroom including: teacher observation, assignments, oral presentations, models, projects, quizzes, tests, and exams.

Class performance and assignments:

Besides a daily demonstration of willingness to participate in class activities and exercises, the student who attends regularly and shows a consistent, conscientious effort towards the course material will do well here. Assignments and/or projects may be given weekly and due on the assigned date.

Extra help is available before school, during lunch and after school hours. (Note: Please sign up for extra help at least a day in advance)

Quizzes and Unit Tests:

Quizzes will occur about twice a chapter and may not always be announced. Unit tests will pertain to the current and may include past units.

Unit Evaluation:

For each unit, marks will be awarded based on the following percentages:

Unit Tests	30 %
Homework / Assignments	30 %
Quizzes	15 %
Projects/Labs	15 %
Journal	10 %

Final Grade:

There are five units, each worth 16% of the final grade

Units	80 %
Mid-term	10 %
Final Exam	10 %