Calgary Board of Education

Nelson Mandela High School
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Science 14

Teacher Contact Info:

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Fall 2023/24 Re-entry Information

Over the course of the 2023-2024 school year, Nelson Mandela High School teachers will maintain an online course presence containing materials, resources, assignments and supports through our D2L environment. It is important for students to take an active role in their learning and stay current in their schoolwork if away for any reason.

Course Description:

Science 14 is the pre-requisite course for Science 24, which leads to the achievement of a high school diploma. In this course, the student will grasp how they work with different properties of matter in applicable scenarios and how matter and energy cause living systems to thrive. They will have the opportunity to interact with many activities that detail the transfer of energy in everyday technology. They will also apply the scientific method of investigation to the world we live in.

Science 14 consists of four units of study: Properties of Matter, Matter and Energy in Living Systems, Understanding Energy Transfer Technologies, & Matter and Energy in the Environment.

Course Objectives and Assessment:

For a more detailed list of curricular outcomes, please see the Science 14 Program of Studies .

Science Skills

The Science department will formally assess science skills this year as outlined in the following table:

Skills	Descriptor
SK1: Initiate & Plan	Formulate questions about observed relationships and plan investigations of questions, ideas, problems and issues.
SK2: Perform & Record	Conduct investigation into relationships between and among observable variables and use a broad range of tools and techniques to gather and record data and information.
SK3: Analyze & Interpret	Analyze data and apply mathematical and conceptual models to develop and assess possible solutions.
SK4: Communication and Teamwork	Work collaboratively in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results.

Outcomes

Unit / Weight	Outcome
Properties of Matter	1) Classify various forms of matter, including commonly used household substances, on the basis of their properties, and relate these properties to their safe use, storage and disposal. 2) Describe solutions and solubility, solutes and solvents; and then describe how these concepts are applied to the production of prepared foods and other useful materials. 3) Describe the properties of elements and compounds, and use the periodic table to identify trends in properties.
Matter and Energy in Living Systems	1) Describe how natural and technological cooling and heating systems are based upon the transfer of thermal energy (heat) from hot to cold objects. 2) Explain the functioning of common methods and devices designed to control the transfer of thermal energy. 3) Describe and compare simple machines as devices that transfer energy and multiply forces or distances.
Energy Transfer Technologies	1) Describe, in general terms, the exchange of matter by the digestive and circulatory systems, the functional relationship between the two systems and the need for a healthy diet and lifestyle. 2) Describe disorders of the digestive and circulatory systems as imbalances induced by genetic, lifestyle and environmental factors. 3) Describe, in general terms, the structure and function of plant and animal cell parts; and trace the development of the cell theory. 4) Describe how the flow of matter in the biosphere is cyclical along characteristic pathways and can be disrupted by human activity.
Matter and Energy in the Environment	1) Describe how the relationships among input solar energy, output terrestrial energy and energy flow within the biosphere affect the lives of humans and other species. 2) Analyze a local ecosystem in terms of its biotic and abiotic components, and describe factors of the equilibrium.

Course Materials and Resources:

Binder with loose-leaf paper, pens, pencils, erasers, ruler, calculator.

Key Links:

Appropriate student conduct at Nelson Mandela High School:

- NMHS Code of Conduct
- Digital Citizenship
- Academic Integrity
- Assessment Rules

Student signature: _____ **Parent signature:** _____