TIGER NATION

Home of the MHS Tigers

Mayerthorpe Jr. Sr. High School

Science 7 Course Outline

2020-2021

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Textbook – Science in Action 7

Introduction

To become scientifically literate, students must develop a thorough knowledge of science and its relationship to technologies and society. They must also develop the broad-based skills needed to identify and analyze problems; explore and test solutions; and seek, interpret and evaluate information. The Alberta Education Science Program of Studies presents science in a meaningful context – providing opportunities for students to explore the process of science, its applications and implications, and to examine related technological problems and issues. By doing so, students become aware of the role of science in responding to social and cultural change and in meeting needs for a sustainable environment, economy and society. (Alberta Education, 2003)

Goals

The following goals for Canadian science education are addressed through the Alberta science program. Science education will:

(a) encourage students at all grade levels to develop a critical sense of wonder and curiosity about scientific and technological endeavours,

(b) 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,

(c) prepare students to critically address science-related societal, economic, ethical and environmental issues,

(d) provide students with a foundation in science that creates opportunities for them to pursue progressively higher levels of study, prepares them for science-related occupations, and engages them in science related hobbies appropriate to their interests and abilities,

(e) enable students, of varying aptitudes and interest, to develop a knowledge of the wide spectrum of careers related to science, technology and the environment. (Alberta Education, 2003)

Education in Alberta aims to honor cultural diversity and promote intercultural understanding. Students are able to build on foundational knowledge about First Nations, Metis, and Inuit peoples. The program of studies provides opportunities for students to develop a knowledge and understanding of, and respect for, the histories, cultures, languages, contributions, perspectives, experiences, and contemporary contexts of First Nations, Metis, and Inuit.

*Basic Materials (subject to change)

Students are expected to bring these materials with them everyday:

3 ring binder
Set of dividers (5 sections – one for each unit)
Loose leaf paper – lined and graph
Eraser
Pencil Crayons
Blue pens
Red (or another accent colour) pens
Pencils
Ruler

Program Organization

The Grade 7 Science program is divided into 5 units of study:

Unit A – Interactions & Ecosystems (Social & Environmental Emphasis)

Ecosystems develop and are maintained by natural processes and are affected by human action. To foster an understanding of ecosystems, this unit develops student awareness of ecosystem components and interactions, as well as natural cycles and processes of change. Building on this knowledge, students investigate human impacts and engage in studies that involve environmental monitoring and research. By reflecting on their findings, students become aware of the intended and unintended consequences of human activity, and recognize the need for responsible decision making and action.

Topics

(a) Relationships exist between living things and their environments.
(b) The flow of energy and the cycling of matter can be traced and interpreted in ecosystems.
(c) Changes can be observed and monitored in ecosystems.
(d) Maintaining sustainable environments requires knowledge, decisions, and actions.

Unit B – Plants for Food & Fibre (Science & Technology Emphasis)

Humans have always depended on plants as a source of food and fibre, and to meet a variety of other needs. To better meet these needs, technologies have been developed for selecting and breeding productive plant varieties and for maximizing their growth by modifying growing environments. Long-term sustainability requires an awareness of the practices humans use and an examination of the impacts of these practices on the larger environment.

Topics

(a) Understanding the structures and life processes of plants helps us to interpret their needs.
(b) Plants play an essential role in the environment and in meeting human needs.
(c) Soil is an important resource that human activity can protect or degrade.
(d) The ways that plants are grown and used are related to human needs, technology, and the environment.

Unit C – Heat & Temperature (Social & Environmental Emphasis)
The production, transfer, and transformation of heat energy plays an important role in meeting human needs. In learning about heat, students investigate sources and uses of heat energy and consider the impact of resource usage on our long-term ability to meet energy needs. In focusing their studies, students explore different applications, investigate the scientific principles involved and consider questions about the nature of heat. The particle model of matter is introduced to help students explain their observations and understand the relationships between heat and temperature.

Topics

(a) Human needs have led to technologies for obtaining and controlling heat.
(b) Heat affects matter in different ways.
(c) Understanding heat and temperature helps explain natural phenomena and technological devices.
(d) Technologies that use hat have benefits and costs to society and to the environment.

Unit D – Structures & Forces (Science & Technology Emphasis)
Structures can be found in both natural and human-constructed environments, serving a variety of purposes and taking a wide range of forms. In learning about structures, students investigate the properties of materials used and test them under different loads and forces. They examine different ways that structural components are configured, analyze forces involved, and investigate resulting effects on structural strength and stability. As part of their study, students also examine construction methods used in the past and the present and learn how science and technology link together in developing safe and efficient designs that meet human needs.

Topics

(a) Structures are found in natural and human-made environments.
(b) External and internal forces act on structures.
(c) Structural strength and stability depend on the properties of different materials and how they are joined together.
(d) Structures are designed, evaluated, and improved in order to meet human needs.

Unit E – Planet Earth (Nature of Science Emphasis)
The scientific study of Earth is based on direct observations of landforms and materials that make up Earth's surface and on the sample evidence we have of Earth's interior. By studying this evidence, we discover patterns in the nature and distribution of Earth's materials, and in the kinds of changes that take place. This knowledge can be used in developing models for geologic structures and processes – models that help both scientists and students enlarge their understanding of their observations, and guide further investigation and research.

Topics

(a) Earth's surface undergoes gradual and sudden changes.
(b) The rock cycle describes how rocks form and change over time.
(c) Landforms provide evidence of change.
(d) The fossil record provides evidence of Earth's changes over time.

<u>Order of Instruction:</u>

Unit A – Interactions & Ecosystems **(Sept./Nov)**
Unit B – Plants for Food & Fibre **(Nov./Jan)**
Unit C – Heat & Temperature **(Feb./March)**
Unit D – Structures & Forces **(March/April)**
Unit E – Planet Earth **(April/June)**

Evaluation

Unit Assignments	45%
Section Tests & Quizzes	35%
Final Examination (all units)	20%

Unit Assignments (45%)

Assignments will include chapter questions, vocabulary lists, etc. In order to ensure consistent effort, students will not be informed as to whether or not an assignment will be taken in or become part of their binder. All assignments must be turned in at the beginning of class.

Section Tests & Quizzes (35%)

Quizzes – To ensure that students keep up their studies on a daily basis, there will be announced quizzes in which students will be asked to recall information from previous classes.

Unit Test – At the end of each unit, a test will be written with the main emphasis on the most recently completed unit. However, because science knowledge builds upon itself, as well as other subjects, particularly mathematics, understanding of previous chapters and other courses will be essential. (All math concepts required for science will be covered in science class.) Unit tests will consist of matching, fill-in-the-blank, multiple-choice, numerical answer, and written answer questions.

Final Examination (20% of Final Mark, June)

The final examination will follow a similar format to that of the unit tests but on a larger scale and will cover the entire year's work. There will be time to review prior to the exam date.

Assessment Strategies:

The learning strategies which will be used to help students reach their potential include:

- Differentiated Instruction (D.I.) and Assessment for Learning (A4L).

D.I. involves being more aware of the differences in how students learn which in turn leads to varied methods of instruction to better meet student needs. D.I. will also involve giving students a greater say in some of the areas they choose to focus their studies on and how they present their findings. A4L *(Learning Activities)* requires students to be more aware of the objectives and requirements of each assignment. It focuses on using assignments as a method of improvement rather than as a source of marks. In this light, some of the students' work will be commented on, discussed, without putting an actual mark on it. In this way, students will learn what is expected of them and how to improve their work. It is vital that students put their best effort into completing and learning from all assignments.

- Assessment of Learning

Assignments -on a regular basis individual assignments will be taken in and carefully marked as a check of student understanding and progress. These will include Applying Concept and Critical Thinking questions, book/ lab reports, mapping projects, etc. and are used for marks.
-all assignments and projects must be completed. Late work will be completed at noon as zeros are not acceptable.

Quizzes- to ensure that students keep up with their studies on a daily basis there will be short quizzes in which students will be asked to recall work from the previous day, explain an important concept or term, etc.

Tests- at the end of each unit a test will be written covering the work just completed. However, due to the fact that most courses build on previous knowledge, understanding the ideas from earlier chapters will be necessary. Tests will consist of a variety of multiple-choice questions, vocabulary words, and written response questions, depending on the course. All tests must be written. If you have a valid reason for missing a test, make arrangements to write a make-up as soon as you return.

Final Exam- these will deal with all the material covered to date. The format will be similar to the chapter tests but on a larger scale.

The Final Grade:
The evaluation for each course is based on the student's achievement of curriculum expectations and the demonstrated skills required for effective learning. The percentage grade represents the quality of the student's overall achievement of the expectations for the course and reflects the corresponding level of achievement.

Homework

Efforts will always be made to provide ample class time to complete course work but sometimes, more time is required and homework becomes a necessity.

Classroom Expectations

In order for our classroom to be a positive learning community, we all need to respect each other's right to learn and teach. All students in our class are capable of success in science if we all follow these basic expectations:

1. ARRIVE ON TIME AND PREPARED EVERY DAY. You will need your binder, textbook, journal, blue pen, red pen, pencil, eraser, highlighter, ruler and agenda. There is no excuse for leaving these items at home because you know you have science class everyday. It is disrespectful and disruptive to the teacher and your fellow classmates to arrive late or unprepared.

2. RESPECT is an essential part of working in a learning community:

    a. All students are expected to respect themselves, each other and the teacher, as well as all property and equipment. Name-calling, teasing, inappropriate language, damage to property, etc will not be tolerated. Inappropriate behaviour will be dealt with immediately. Further incidents will be handled more sternly and may involve parents and administration.

b. **Use class time effectively and complete your work on time.** Misuse of class time will result in less class time to work on assignments, etc. Misuse of time may also result in making up for that time at lunch hour. (this will apply to face to face learning)

c. Do not talk when someone else is talking, whether it is the teacher or a classmate. You want to be heard when you are speaking and it is expected you would demonstrate the same respect.

3. Inform the teacher if you know you are going to be absent so you can complete missed work on your own time. If you are absent unexpectedly**, it is your responsibility** to find out what you missed from the teacher or a classmate and get caught up.

4. If you are struggling or unsure of a concept, please speak with the teacher immediately. The longer you wait, the further behind you find yourself! I will always do my best to make myself available for extra help but you have to ask.

We all need to do our part to ensure a successful year, the teacher has final responsibility for what goes on in our classroom and therefore, it is expected that students follow instructions and requests in order to maintain a safe and positive learning environment.

Any parent wishing to meet with me to discuss a problem or concern may arrange a meeting by calling the school (780-786-2624) or by email whichever is most convenient. Any student wishing to request extra help or wishing to discuss a problem or concern can speak with me or via email. I will do my best to make myself available for extra help.