

# **Mayerthorpe Jr/Sr High School Course Outline**

**2021-22  
Science 9**

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## **COURSE DESCRIPTION**

The secondary science program is guided by the vision that all students have the opportunity to develop scientific literacy. The goal of scientific literacy is to develop the science-related knowledge, skills and attitudes that students need to solve problems and make decisions, and at the same time help them to become lifelong learners—maintaining their sense of wonder about the world around them.

Education in Alberta aims to honour 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.

## **COURSE CURRICULUM OUTCOMES**

Upon completion of this course, participants will have/will be able to:

1. critical sense of wonder and curiosity about scientific and technological endeavors
2. 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
3. critically address science related societal, economic, ethical and environmental issues
4. 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
5. enable students, of varying aptitudes and interests, to develop a knowledge of the wide spectrum of careers related

## COURSE TOPICS/UNITS DATES

<p><b>1.</b></p>	<p><b>Biological Diversity</b></p> <ul style="list-style-type: none"> <li>● Investigate and interpret diversity among species and within species, and describe how diversity contributes to species survival</li> <li>● Investigate the nature of reproductive processes and their role in transmitting species characteristics</li> <li>● Describe, in general terms, the role of genetic materials in the continuity and variation of species characteristics; and investigate and interpret related technologies</li> <li>● Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making</li> </ul>	<p><b>3 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● one final project</li> <li>● other formative assessments as required</li> </ul>
<p><b>2.</b></p>	<p><b>Matter and Chemical Change</b></p> <ul style="list-style-type: none"> <li>● Investigate materials, and describe them in terms of their physical and chemical properties</li> <li>● Describe and interpret patterns in chemical reactions</li> <li>● 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</li> <li>● Apply simplified chemical nomenclature in describing elements, compounds and chemical reactions</li> </ul>	<p><b>3 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● other formative assessments as required</li> </ul>
<p><b>3.</b></p>	<p><b>Environmental Chemistry</b></p> <ul style="list-style-type: none"> <li>● Investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things</li> <li>● Identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality</li> <li>● Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment</li> </ul>	<p><b>3 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● critical thinking project</li> <li>● other formative assessments as required</li> </ul>
<p><b>4.</b></p>	<p><b>Electrical Principle and Technologies</b></p> <ul style="list-style-type: none"> <li>● Investigate and interpret the use of devices to convert various forms of energy to electrical energy, and electrical energy to other forms of energy</li> <li>● Describe technologies for transfer and control of electrical energy</li> <li>● Identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions</li> </ul>	<p><b>3 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● other formative assessments as required</li> </ul>

	<ul style="list-style-type: none"> <li>Describe and discuss the societal and environmental implications of the use of electrical energy</li> </ul>	
<b>5.</b>	<b>Space Exploration</b> <ul style="list-style-type: none"> <li>Investigate and describe ways that human understanding of Earth and space has depended on technological development</li> <li>Identify problems in developing technologies for space exploration, describe technologies developed for life in space, and explain the scientific principles involved</li> <li>Describe and interpret the science of optical and radio telescopes, space probes and remote sensing technologies</li> <li>Identify issues and opportunities arising from the application of space technology, identify alternatives involved, and analyze implications</li> </ul>	<b>3 weeks</b> <ul style="list-style-type: none"> <li>unit exam</li> <li>topic quizzes</li> <li>other formative assessments as required</li> </ul>

**RESOURCES/TEXTS/SUPPLIES:** Science in Action 9

**FEES:** none

**PREREQUISITES:** none

**COURSE EVALUATION**

**STUDENT ASSESSMENT:**

**Assessment for Learning (Formative Assessment)** is a systematic process of collecting information or evidence about student learning and is not assigned a grade/mark for the report card. **Assessment of Learning (Summative Assessment)** the judgment we make about the assessments of student learning based on established criteria and a mark/grade is recorded for the report card. The purpose of assessment is to improve student learning. This means that judgments of student performance must be criterion-referenced so that descriptive feedback can be given that includes clearly expressed next steps for improvement. Tools of varying complexity are used by the teacher to facilitate this. For the more complex evaluations, the criteria are incorporated into a rubric where levels of performance for each criterion are stated in language that can be understood by students. Where possible, students will be engaged in their own assessment through self reflection and the construction of rubrics

Assessment is embedded within the instructional process throughout each unit rather than being an isolated event at the end. Often, the learning and assessment tasks are the same, with formative assessment provided throughout the unit. In every case, the desired demonstration of learning is articulated clearly and the learning activity is planned to make that demonstration possible. This process of beginning with the end in mind helps to keep focus on the expectations of the course curriculum outcomes. The evaluations are expressed as a percentage/mark/grade based upon levels of achievement

### **The Final Grade:**

The evaluation for this 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.

- 80% of the grade will be based upon evaluations conducted throughout the course.
  - Assignments and labs – 10%
  - Quizzes – 20%
  - Unit tests– 50%

20% of the grade will be based on a Provincial Achievement Exam (PAT) administered at the end of the course. This exam will be based on an evaluation of all units of the course

- NOTE: A 65% or above average in Science 9 is the prerequisite for Science 10.

## **GRADE DETERMINATION:**

### **Term grade determination:**

Grade will be based upon evaluations conducted throughout the course. This portion of the grade will reflect the student's most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement.

### **Final grade determination:**

Grade will be based on the accumulation of term grade evidence and a final examination (PAT Exam) administered at the end of the course (this exam will be based on an evaluation of all units of the course). This grade will reflect the student's most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement.

## **OPPORTUNITIES TO DEMONSTRATE LEARNING:**

When the teacher's professional judgment indicates the student is in a position to demonstrate learning on a summative assessment with greater success than the initial attempt, such an alternative or additional summative assessment will be provided at a time agreed upon by the student and the teacher.

### **Classroom Expectations:**

- Be on time for every Science 9 class.
- Be prepared for every Science 9 class.
- Complete all assignments and readings
- Set a goal, for example my goal is for every student to achieve 70% or better.
- Adhere to Mayerthorpe High School Code of Conduct.

Therefore:

- You are responsible for getting all notes and assignments missed due to absence.
- You are responsible for your achievement. Help is available outside class time when permitted.
- You will be marked late if not in the room as attendance is completed. 20 minutes late is considered an absence.
- All summative assessments must be written.

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**Parent/Guardian: Please email me at [jason.bidniak@ngps.ca](mailto:jason.bidniak@ngps.ca) to confirm you have looked over this outline or if you have concerns/questions.**

**Thank you**