

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

**2021- 22  
Science 20**

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## **COURSE DESCRIPTION**

The secondary science program is guided by the vision that all students, regardless of gender or cultural background, are given the opportunity to develop scientific literacy. The goal of scientific literacy is to develop in students the science-related knowledge, skills and attitudes that they need to solve problems and make decisions and, at the same time, to help students become lifelong learners who maintain their sense of wonder about the world around them.

Diverse learning experiences within the science program provide students with opportunities to explore, analyze and appreciate the interrelationships among science, technology, society and the environment and to develop understandings that will affect their personal lives, their careers and their futures.

## **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>Unit A Chemical Changes</p> <ul style="list-style-type: none"> <li>● Students will investigate aqueous solutions to determine conductivity and to calculate concentration.</li> <li>● Students will explain oxidation, reduction and spontaneity and apply this knowledge to voltaic and electrolytic cells and to industrial processes.</li> <li>● Students will describe the properties of simple hydrocarbons and describe hydrocarbon-based industrial processes that are important in Alberta.</li> </ul>	<p><b>4 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● projects/labs</li> <li>● other formative assessment as required</li> </ul>
<p><b>2.</b></p>	<p>Unit B Changes in Motion</p> <ul style="list-style-type: none"> <li>● Students will describe one-dimensional motion of objects in terms of displacement, time, velocity and acceleration.</li> <li>● Students will describe and analyze the law of conservation of momentum for one-dimensional collisions and change in momentum (impulse) to explain how force affects motion.</li> </ul>	<p><b>4 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● projects/labs</li> <li>● other formative assessment as required</li> </ul>
<p><b>3.</b></p>	<p>Unit C The Changing Earth</p> <ul style="list-style-type: none"> <li>● Students will analyze the scientific evidence and explanations for geologic phenomena that occurred long ago or are taking place over a long period of time.</li> <li>● Students will analyze and assess the evidence to explain the theory of plate tectonics and the internal structure of Earth.</li> <li>● Students will analyze and assess the evidence provided by the fossil record of change in the environment and life forms over a period of 3.5 billion years.</li> <li>● Students will analyze the evidence of, and assess the explanations for, natural variations in Earth's climate over the last two million years.</li> </ul>	<p><b>4 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● projects/labs</li> <li>● other formative assessment as required</li> </ul>
<p><b>4.</b></p>	<p>Unit D Changes in Living Systems</p> <ul style="list-style-type: none"> <li>● Students will analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components.</li> <li>● Students will analyze and investigate the cycling of matter and the flow of energy through the biosphere and ecosystems as well as the interrelationship of society and the environment.</li> <li>● Students will analyze and describe the adaptation of organisms to their environments, factors limiting natural populations, and evolutionary change in an ecological context.</li> </ul>	<p><b>4 weeks</b></p> <ul style="list-style-type: none"> <li>● unit exam</li> <li>● topic quizzes</li> <li>● projects/labs</li> <li>● other formative assessment as required</li> </ul>

**RESOURCES/TEXTS/SUPPLIES: Science 20 Alberta Education**

**FEES: none**

**PREREQUISITES: Credit in Science 10 is required to take Science 20.**

## **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 final exam 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 20 is the recommended prerequisite for Science 30.

## **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 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 20 class.
- Be prepared for every Science 20 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.
- All summative assessments must be written. All summative assessments must be written.
- You will be marked late if not in the room as attendance is completed. 20 minutes late is considered an absence.
- Attendance policy is in effect – see student handbook

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**I have read and understand what is required of me for this course**

**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**