

MYP Syllabus

Course: Science

MYP Level: Year 2 (7th grade)

Teacher: Amanda Hoyman

Teacher Contact: ahoyman@kyrene.org

I. Course Description:

In Year 2 of Science, students will work throughout the year (with multiple opportunities) to demonstrate their knowledge and skills through performance based/project learning, collaborative learning, direct instruction, formative assessments, and summative assessments. They will reflect on the holistic nature of science, the real-world work of scientists and engage with all aspects of science, either through individual objectives or connected processes.

They will incorporate strategies from the International Baccalaureate program. Students will aspire to reflect those characteristics of the IB Learner Profile. As a result of the high standards, success in the class will depend on the motivation of the student. Students must keep up with their assignments to practice the skills, be inquisitive by asking questions, follow expectations, and be balanced by balancing all aspects of their lives between home, extra-curricular, and school to be successful.

II. IB Aims and Objectives:

A: Knowing and understanding

B: Inquiring and designing

C: Processing and evaluating

D: Reflecting on the impact of science

As a part of the Middle Years Program (MYP), of the International Baccalaureate (IB) program, the aim of the teaching of science is to encourage and enable the student to:

- describe scientific knowledge
- apply scientific knowledge & understanding to solve problems set in familiar & unfamiliar situations
- analyze information to make scientifically supported judgments
- describe a problem or question to be tested by a scientific investigation
- outline a testable hypothesis and explain it using scientific reasoning
- describe how to manipulate the variables and describe how data will be collected
- design scientific investigations
- present collected and transformed data
- interpret data and describe results using scientific reasoning
- discuss the validity of a hypothesis based on the outcome of the scientific investigation
- discuss the validity of the method
- describe improvements or extensions to the method
- describe the ways in which science is applied and used to address a specific problem or issue
- describe and summarize the various implications of the use of science and its application in solving a specific problem or issue
- apply scientific language effectively
- document the work of others and sources of information used

Key concepts

Key concepts promote the development of a broad curriculum. They represent big ideas that are both relevant within and across disciplines and subjects. Inquiry into key concepts can facilitate connections

between and among:

- courses within the sciences subject group (intra-disciplinary learning)
- other subject groups (interdisciplinary learning).

The key concepts contributed by the study of sciences are **change, relationships and systems**.

Related concepts

Related concepts promote deep learning. They are grounded in specific disciplines and are useful for exploring key concepts in greater detail. Inquiry into related concepts helps students develop more complex and sophisticated conceptual understanding.

III. Topics:

1st Quarter

- Lab Safety - Scientific Method - Engineering Design Process
- Minerals & Rocks

2nd Quarter

- Weathering and Erosion
- Plate Tectonics
- History of the Earth

3rd Quarter

- Ecosystems
- Populations

4th Quarter

- Earth, Sun, & Moon
- Solar System & Universe

IV. Service Learning:

At KMS, MYP students will engage in Service Learning activities. A community in need will be chosen, students will research the needs and how to help, write an action plan, take action on the plan and complete the service, and then create a presentation of their work. They will demonstrate Learner Profile attributes and will reflect on the Approaches to Learning skills that they are strengthening. The service learning activities are semester-long. Students use a self-paced guide and process journal to complete these activities. In addition, teachers act as facilitators as students work through their projects rather than direct instructors. The work for these service learning activities take place during our IB Projects period.

V. Internationalism

Throughout the year in MYP 2 Science, students will be learning about their global communities. All IB programmes share common beliefs and values about teaching and learning science. There is an International dimension: Students develop an appreciation that science requires open-mindedness and freedom of thought transcending gender, political, cultural, linguistic, national and religious boundaries. Students may be presented with individual, community, or global challenges that require scientific understanding, specifically in MYP 2 "How is the universe structured?"

VI. Teaching Methods

Teaching methods include Inquiry, Investigation, and Collaboration.

Much instruction will be directly led by the teacher but will also be inquiry-based and student lead as much as possible.

- Inquiry, in the broadest sense, is the process that is used to move to deeper levels of understanding. Inquiry involves speculating, exploring, questioning and connecting. The MYP structures sustain inquiry in sciences by developing conceptual understanding in global contexts. Teachers and students develop a statement of inquiry and use inquiry questions to explore science. Through their inquiry, students develop specific interdisciplinary and disciplinary approaches to learning skills.
- Learning through investigation. Students construct meaning by designing, conducting and

reflecting on scientific investigations. The scientific process, which encourages hands-on experience, inquiry, and critical thinking, enables students to make informed and responsible decisions, not only in science but also in other areas of life. The engineering design process emphasizes open-ended problem solving and encourages students to learn from failure. This process nurtures students' abilities to create innovative solutions to challenges in any subject.

- Collaboration - Students are provided opportunities to work individually and with their peers to learn about science within and beyond the classroom. They develop safe and responsible working habits in practical science.

VII. Assessment

Students will be assessed formally and informally. Formal assessments occur during the end of units and are in a written format. These assessments may be in the form of a multiple choice exam, short answer assessment, lab reports and/or projects.

Informal assessment may include bell work, "ticket out the door", student self-reflection and/or teacher observations.

Criterion for assessment:

At the end of year 2, students should be able to:

- Outline, design, implement, and interpret data in a scientific investigation.
- Summarize the ways in which science is applied and used to address a specific problem or issue.
- Apply scientific language effectively.
- Document the work of others and sources of information used.

VIII. Resources

"Science Guide." Edited by IBO, *International Baccalaureate*, International Baccalaureate, 2014, IBO.org.