

# Welcome to Science 10 (MYP 5)

Ms. Mile

## 2018-2019 Course Outline

This course is divided into five areas of Science: Processes of Science, Life Science (Biology), Physical Science (Physics and Chemistry) and Earth and Space Science.

### Approaches to Learning

All MYP units of work offer opportunities for students to develop and practice ATL skills. These skills provide valuable support for students working to meet the subject groups aims and objectives. These skills will be the focus in Science:

Category Skill indicator	Category Skill indicator
Thinking skills	Interpret data gained from scientific investigations
Social skills	Practice giving feedback on the design of experimental methods
Communication skills	Use appropriate visual representations of data based on purpose and audience skills
Self-management skills	Structure information appropriately in laboratory investigation reports
Research skills	Make connections between scientific research and related moral, ethical, social, economic, political, cultural or environmental factors

### Units that will be covered...

#### Life Science

**Big Idea:**  
Genes are the foundation for the diversity of living things.



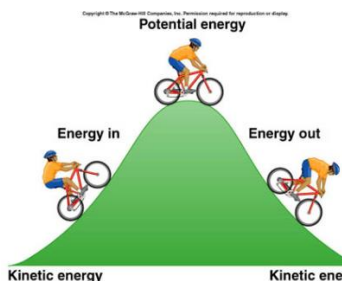
#### Physical Science: Chemistry

**Big Idea:**  
Chemical processes require energy change as atoms are rearranged.



#### Physical Science: Physics

**Big Idea:**  
Energy is conserved and its transformation can affect living things and the environment.



#### Earth and Space Science

**Big Idea:**  
The formation of the universe can be explained by the big bang theory.



The MYP Science course will focus on developing skills related to 4 criteria based objectives.

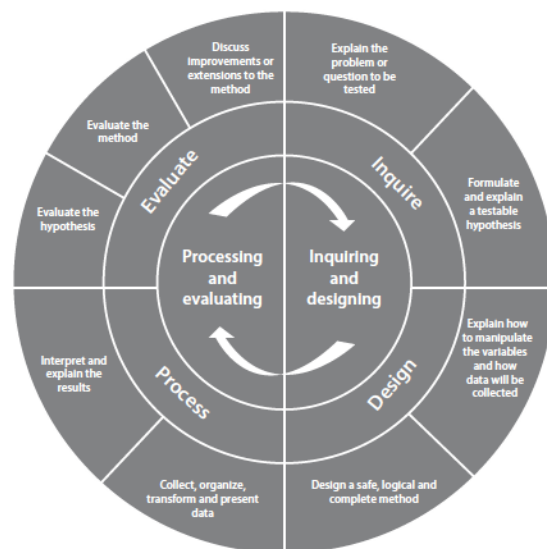
- Knowing and understanding
- Inquiring and designing
- Processing and evaluating
- Reflecting on the impacts of science

# Course Assessment

## Visualizing the Scientific Process

The scientific process of inquiring, designing, processing and evaluating is represented by MYP sciences objectives B (inquiring and designing) and C (processing and evaluating). The visual representation in figure 4 shows the dynamic relationship between the four areas of experimental design and reporting.

Students will be assessed based on the criteria detailed below and MYP assessment will be both formally (report cards) and informally (feedback on assignments) reported. MYP levels will be used to calculate a student's overall standing in a course.



## Criterion A: Knowing and understanding

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ul style="list-style-type: none"><li>• <b>state</b> scientific knowledge</li><li>• apply scientific knowledge and understanding to <b>suggest solutions</b> to problems set in <b>familiar situations</b></li><li>• <b>interpret</b> information to make <b>judgments</b>.</li></ul>
3-4	The student is able to: <ul style="list-style-type: none"><li>• <b>outline</b> scientific knowledge</li><li>• apply scientific knowledge and understanding to <b>solve problems</b> set in <b>familiar situations</b></li><li>• <b>Interpret</b> information to make <b>scientifically supported judgments</b></li></ul>
5-6	The student is able to: <ul style="list-style-type: none"><li>• <b>describe</b> scientific knowledge</li><li>• apply scientific knowledge and understanding to <b>solve problems</b> set in <b>familiar situations</b> and <b>suggest solutions</b> to problems set in <b>unfamiliar situations</b></li><li>• <b>analyze</b> information to make <b>scientifically supported judgments</b></li></ul>
7-8	The student is able to: <ul style="list-style-type: none"><li>• <b>explain</b> scientific knowledge</li><li>• apply scientific knowledge and understanding to <b>solve problems</b> set in <b>familiar and unfamiliar situations</b></li><li>• <b>analyse</b> and <b>evaluate</b> information to make <b>scientifically supported judgments</b></li></ul>

## Criterion B: Inquiring and designing

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>state</b> a problem or question to be tested by a scientific investigation</li> <li>• <b>state</b> a testable hypothesis</li> <li>• <b>state</b> the variables</li> <li>• design a method, <b>with limited success</b></li> </ul>
3-4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>outline</b> a problem or question to be tested by a scientific investigation</li> <li>• <b>formulate</b> a testable hypothesis <b>using scientific reasoning</b></li> <li>• <b>outline</b> how to manipulate the variables, and <b>outline</b> how <b>relevant data</b> will be collected</li> <li>• design a <b>safe method</b> in which he or she <b>selects materials and equipment</b></li> </ul>
5-6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>describe</b> a problem or question to be tested by a scientific investigation</li> <li>• <b>formulate and explain</b> a testable hypothesis <b>using scientific reasoning</b></li> <li>• <b>describe</b> how to manipulate the variables, and <b>describe</b> how <b>sufficient, relevant data</b> will be collected</li> <li>• design a <b>complete and safe method</b> in which he or she selects <b>appropriate materials and equipment</b></li> </ul>
7-8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>explain</b> a problem or question to be tested by a scientific investigation</li> <li>• <b>formulate and explain</b> a testable hypothesis <b>using correct scientific reasoning</b></li> <li>• <b>explain</b> how to manipulate the variables, and <b>explain</b> how <b>sufficient, relevant data</b> will be collected</li> <li>• design a <b>logical, complete and safe method</b> in which he or she selects <b>appropriate materials and equipment</b></li> </ul>

## Criterion C: Processing and evaluating

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>collect and present</b> data in numerical and/or visual forms</li> <li>• <b>interpret</b> data</li> <li>• <b>state</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li>• <b>state</b> the validity of the method based on the outcome of a scientific investigation</li> <li>• <b>state</b> improvements or extensions to the method</li> </ul>
3-4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>correctly collect and present</b> data in numerical and/or visual forms</li> <li>• <b>accurately interpret</b> data and <b>explain</b> results</li> <li>• <b>outline</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li>• <b>outline</b> the validity of the method based on the outcome of a scientific investigation</li> <li>• <b>outline</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>
5-6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>correctly collect, organize and present</b> data in numerical and/or visual forms</li> <li>• <b>accurately interpret</b> data and <b>explain</b> results <b>using scientific reasoning</b></li> <li>• <b>discuss</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li>• <b>discuss</b> the validity of the method based on the outcome of a scientific investigation</li> <li>• <b>describe</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>
7-8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>correctly collect, organize, transform and present</b> data in numerical and/or visual forms</li> <li>• <b>accurately interpret data</b> and <b>explain</b> results <b>using correct scientific reasoning</b></li> <li>• <b>evaluate</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li>• <b>evaluate</b> the validity of the method based on the outcome of a scientific investigation</li> <li>• <b>explain</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>

## Criterion D: Reflecting on the impacts of science

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>outline</b> the ways in which science is used to address a specific problem or issue</li> <li>• <b>outline</b> the implications of the use of science to solve a specific problem or issue, interacting with a factor</li> <li>• <b>apply</b> scientific language to communicate understanding but does so <b>with limited success</b></li> <li>• document sources, <b>with limited success</b></li> </ul>
3-4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>summarize</b> the ways in which science is used to address a specific problem or issue</li> <li>• <b>describe</b> the implications of using science to solve a specific problem or issue, interacting with a factor</li> <li>• <b>sometimes apply</b> scientific language to communicate understanding</li> <li>• <b>sometimes</b> document sources <b>correctly</b></li> </ul>
5-6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>describe</b> the ways in which science is applied and used to address a specific problem or issue</li> <li>• <b>discuss</b> the implications of using science and its application to solve a specific problem or issue, interacting with a factor</li> <li>• <b>usually apply</b> scientific language to communicate understanding <b>clearly and precisely</b></li> <li>• <b>usually</b> document sources <b>correctly</b></li> </ul>
7-8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>• <b>explain</b> the ways in which science is applied and used to address a specific problem or issue</li> <li>• <b>discuss and evaluate</b> the implications of using science and its application to solve a specific problem or issue, interacting with a factor</li> <li>• <b>consistently apply</b> scientific language to communicate understanding <b>clearly and precisely</b></li> <li>• document sources <b>completely</b></li> </ul>