CARSON GRAHAM
SECONDARY

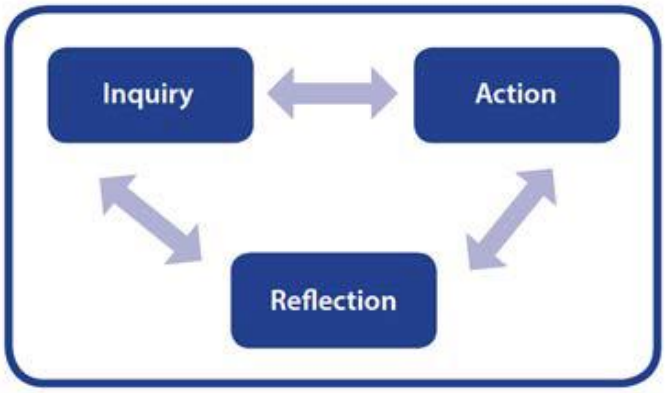
# COURSE OUTLINE – MYP YEAR 4 SCIENCES

***At Carson Graham, we strive for excellence in all endeavours, encourage personal and social responsibility, respect diversity and work to develop a life long commitment to learning.***

***Our aim is to develop inquiring, knowledgeable, confident and caring students who create a better world through intercultural understanding and respect.***

**UNITS OF STUDY**

MYP units foster student inquiry and are conceptually based. Concepts have an essential place in the structure of knowledge. They require students to demonstrate levels of thinking that reach beyond facts or topics. Concepts are used to formulate the understanding that students should retain in the future; they become principles and generalizations that students can use to understand the world and to succeed in further study and in life beyond school.




*(Developing an MYP Unit, 2014)*

**Sciences Key Concepts:**

- Change
- Relationships
- Systems

**Sciences Related Concepts:**

- Balance
- Environment
- Function
- Movement
- Consequences
- Evidence
- Interaction
- Patterns
- Energy
- Form
- Models
- Transformation

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**MYP Global Contexts** guide classroom inquiries and encourage an international perspective

- Identities and relationships
- Orientation in space and time
- Personal and cultural expression
- Scientific and technical innovation
- Globalization and sustainability
- Fairness and development

**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 Sciences:

| **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 |
| 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 |

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

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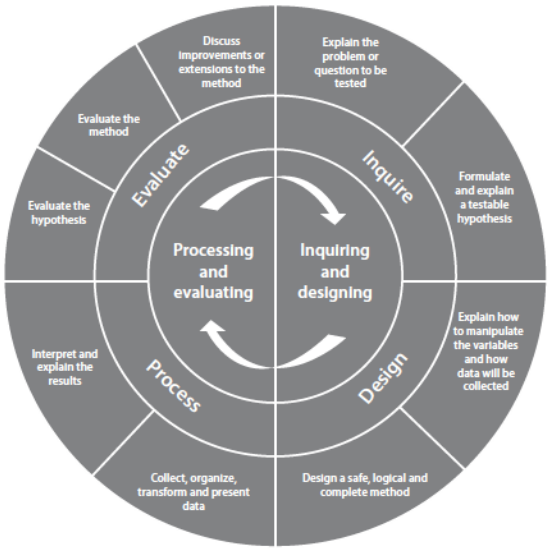
**Visualizing the Scientific Process**

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:<br>• **state** scientific knowledge<br>• apply scientific knowledge and understanding to **suggest solutions** to problems set in **familiar situations**<br>• **apply** information to make **judgments**. |
| 3-4 | The student is able to:<br>• **outline** scientific knowledge<br>• apply scientific knowledge and understanding to **solve problems** set in **familiar situations**<br>• **apply** information to make **scientifically supported judgments** |
| 5-6 | The student is able to:<br>• **describe** scientific knowledge<br>• apply scientific knowledge and understanding to **solve problems** set in **familiar situations** and **suggest solutions** to problems set in **unfamiliar situations**<br>• **interpret** information to make **scientifically supported judgments** |
| 7-8 | The student is able to:<br>• **explain** scientific knowledge<br>• apply scientific knowledge and understanding to **solve problems** set in **familiar and unfamiliar situations**<br>• **analyse** information to make **scientifically supported judgments** |

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 | The student is able to:<br>• **state** a problem or question to be tested by a scientific investigation, with **limited success**<br>• **state** a testable hypothesis<br>• **state** the variables<br>• design **a method, with limited success** |
| 3-4 | The student is able to:<br>• **state** a problem or question to be tested by a scientific investigation<br>• **outline** a testable hypothesis **using scientific reasoning**<br>• **outline** how to manipulate the variables, and **state** how **relevant data** will be collected<br>• design a **safe method** in which he or she **selects materials and equipment** |
| 5-6 | The student is able to:<br>• **outline** a problem or question to be tested by a scientific investigation<br>• **outline and explain** a testable hypothesis **using scientific reasoning**<br>• **outline** how to manipulate the variables, and **outline** how **sufficient, relevant data** will be collected<br>• design **a complete and safe method** in which he or she **selects appropriate materials and equipment** |
| 7-8 | The student is able to:<br>• **describe** a problem or question to be tested by a scientific investigation<br>• **outline and explain** a testable hypothesis **using correct scientific reasoning**<br>• **describe** how to manipulate the variables, and **describe** how **sufficient, relevant** data will be collected<br>• design a **logical, complete and safe method** in which he or she **selects appropriate materials and equipment** |

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 | The student is able to:<br>• **collect and present** data in numerical and/or visual forms<br>• **accurately interpret** data<br>• **state** the validity of a hypothesis **with limited reference** to a scientific investigation<br>• **state** the validity of the method **with limited reference** to a scientific investigation<br>• **state limited** improvements or extensions to the method |
| 3-4 | The student is able to:<br>• **correctly collect and present** data in numerical and/or visual forms<br>• **accurately interpret** data and **describe** results<br>• **state** the validity of a hypothesis based on the outcome of a scientific investigation<br>• **state** the validity of the method based on the outcome of a scientific investigation<br>• **state** improvements or extensions to the method that would benefit the scientific investigation |
| 5-6 | The student is able to:<br>• **correctly collect, organize and present** data in numerical and/or visual forms<br>• **accurately interpret** data and **describe** results **using scientific reasoning**<br>• **outline** the validity of a hypothesis based on the outcome of a scientific investigation<br>• **outline** the validity of the method based on the outcome of a scientific investigation<br>• **outline** improvements or extensions to the method that would benefit the scientific investigation |
| 7-8 | The student is able to:<br>• **correctly collect, organize, transform and present** data in numerical and/or visual forms<br>• **accurately interpret data** and **describe** results **using correct scientific reasoning**<br>• **discuss** the validity of a hypothesis based on the outcome of a scientific investigation<br>• **discuss** the validity of the method based on the outcome of a scientific investigation<br>• **describe** improvements or extensions to the method that would benefit the scientific investigation |

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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 | The student is able to:<br>• **state** the ways in which science is used to address a specific problem or issue<br>• **state** the implications of the use of science to solve a specific problem or issue, interacting with a factor<br>• **apply** scientific language to communicate understanding but does so **with limited success**<br>• document sources, **with limited success** |
| 3-4 | The student is able to:<br>• **outline** the ways in which science is used to address a specific problem or issue<br>• **outline** the implications of using science to solve a specific problem or issue, interacting with a factor<br>• **sometimes apply** scientific language to communicate understanding<br>• **sometimes** document sources **correctly** |
| 5-6 | The student is able to:<br>• **summarize** the ways in which science is applied and used to address a specific problem or issue<br>• **describe** the implications of using science and its application to solve a specific problem or issue, interacting with a factor<br>• **usually apply** scientific language to communicate understanding **clearly and precisely**<br>• **usually** document sources **correctly** |
| 7-8 | The student is able to:<br>• **describe** the ways in which science is applied and used to address a specific problem or issue<br>• **discuss and analyse** the implications of using science and its application to solve a specific problem or issue, interacting with a factor<br>• **consistently apply** scientific language to communicate understanding **clearly and precisely**<br>• document sources **completely** |