

MYP Science Year 1/ Grade 6 Mrs. Ramona Johnson-Singleton

Jackson Middle Sc

COURSE DESCRIPTION

MYP Science challenges all students to apply practical, critical and creative thinking skills to solve scientific questions; encourages students to explore the role of a scientist in both historical and contemporary contexts; and raises students' awareness of their responsibilities when making scientific decisions and taking action. Inquiry and problem-solving are at the heart of the subject.

MYP Science requires students to design and solve scientific investigations via the steps of the scientific method, which provides the methodology used to structure the inquiry and analysis of problems, the development of feasible solutions, the creation of solutions, and the testing and evaluation of the solution.

MYP science aims to provide students with the opportunity to show their understanding of the main concepts and processes of science, by applying these to solve problems in familiar and unfamiliar situations. Students should demonstrate critical-thinking skills to analyze and evaluate information in order to make informed judgments in a variety of contexts. The MYP sciences curriculum must be relevant to the interests of students, providing them with opportunities to explore the connections between science and everyday life. It is anticipated that students will become interested in and engaged with the role of science in the world. Through the investigation of real examples of the application of science students will gain insight into the tensions and dependencies between science and societal, environmental and ethical factors.

MYP AIMS

The aims of all MYP subjects state what a teacher may expect to teach and what a student may expect to experience and learn. These aims suggest how the student may be changed by the learning experience. The aims of MYP sciences are to encourage and enable students to:

- understand and appreciate science and its implications.
- consider science as a human endeavor with benefits and limitations.
- cultivate analytical, inquiring and flexible minds that pose questions, solve problems, construct explanations and judge arguments.
- develop skills to design and perform investigations, evaluate evidence and reach conclusions.
- build an awareness of the need to effectively collaborate and communicate.
- apply language skills and knowledge in a variety of real-life contexts.
- develop sensitivity towards the living and non-living environments.
- reflect on learning experiences and make informed choices.





GLOBAL CONTEXTS

Global contexts direct learning toward independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP sciences can develop meaningful explorations of:

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

The IB Learner Profile

The aim of all IB programmes is to develop internationally minded people who, recognizing our common humanity and shared guardianship of the planet help to create a better and more peaceful world. IB learners strive to be:

Inquirers They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning and this love of learning will be sustained throughout their lives.

Knowledgeable They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.

Thinkers They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.

Communicators They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.

Principled They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.

Open-minded They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience.

Caring They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.



Risk-takers They approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.

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Balanced They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.

Reflective They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths

MYP ASSESSMENT CRITERIA

Objective A. Knowing and understanding

Students develop scientific knowledge (facts, ideas, concepts, processes, laws, principles, models and theories) and apply it to solve problems and express scientifically supported judgments.

Assessment of this objective must be done using tests or exams. To reach the highest level students must make scientifically supported judgments about the validity and/or quality of the information presented to them. Assessment tasks could include questions dealing with "scientific claims" presented in media articles, or the results and conclusions from experiments carried out by others or any question that challenges students to analyze and examine the information and allow them to outline arguments about its validity and/or quality using their knowledge and understanding of science.

In order to reach the aims of sciences, students should be able to:

i. explain scientific knowledge

ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations

iii. analyze and evaluate information to make scientifically supported judgments.

Objective B. Inquiring and designing

Intellectual and practical skills are developed through designing, analyzing and performing scientific investigations. Although the scientific method involves a wide variety of approaches, the MYP emphasizes experimental work and scientific inquiry.

When students design a scientific investigation they should develop a method that will allow them to collect sufficient data so that the problem or question can be answered. To enable students to design scientific investigations independently, teachers must provide an open-ended problem to investigate. An open-ended problem is one that has several independent variables appropriate for the investigation and has sufficient scope to identify both independent and controlled variables. In order to achieve the highest level for the strand in which students are asked to design a logical, complete and safe method, the student would include only the relevant information, correctly sequenced.

In order to reach the aims of sciences, students should be able to:





- ii. Formulate a testable hypothesis and explain it using scientific reasoning
- iii. Explain how to manipulate the variables, and explain how data will be collected
- iv. Design scientific investigations.

Objective C. Processing and evaluating

Students collect process and interpret qualitative and/or quantitative data, and explain conclusions that have been appropriately reached. MYP sciences help students to develop analytical thinking skills, which they can use to evaluate the method and discuss possible improvements or extensions.

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In order to reach the aims of sciences, students should be able to:

- i. present collected and transformed data
- ii. interpret data and explain results using scientific reasoning
- iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation
- iv. evaluate the validity of the method
- v. explain improvements or extensions to the method.

Objective D. Reflecting on the impacts of science

Students gain global understanding of science by evaluating the implications of scientific developments and their applications to a specific problem or issue. Varied scientific language will be applied in order to demonstrate understanding. Students are expected to become aware of the importance of documenting the work of others when communicating in science.

Students must reflect on the implications of using science, interacting with one of the following factors: moral, ethical, social, economic, political, cultural or environmental, as appropriate to the task. The student's chosen factor may be interrelated with other factors.

In order to reach the aims of sciences, students should be able to:

i. explain the ways in which science is applied and used to address a specific problem or issue

ii. discuss and evaluate the various implications of the use of science and its application in solving a specific problem or issue

- iii. apply scientific language effectively
- iv. document the work of others and sources of information used





COURSE OUTLINE

UNIT	TOPICS/CONTENT	ASSESSMENT TASK
Unit 1: In the Beginning	Safety, Scientific Investigations	Design and complete a simple scientific investigation SCIENCE FAIR
Unit 2: Living Things/ Hierarchical Organization	Cells	Written essay on how cells make up the world around us in brochure form Cell booklet. SCIENCE FAIR
Unit 3: Good and Bad Germs	Bacteria	Exam SCIENCE FAIR
Unit 4: Who am I?	Animals	Exam SCIENCE FAIR
Unit 5: Green makes the world go around.	Plants	Plant identifications diagram. SCIENCE FAIR
Unit 6: The Unwanted Growth	Fungi	Exam SCIENCE FAIR
Unit 7: Protists	Protists	Protists Diagram SCIENCE FAIR
Unit 8: Survival Part 1	Ecology	Design a scientific investigation on the changes of ecological foot prints. SCIENCE FAIR



Unit 9: Survival Part 2 Adaptations and Plants Design a poster that illustrates and explains the importance of adapting to your environment. Biome in a box. **SCIENCE FAIR** Unit 10: May the force be with Newton's Laws of Motion Exam you. Unit 11: Fast and Furious Speed and Acceleration Fast and Furious Lab Report Unit 12: To Infinity and Beyond Exam Space science: Galaxies, stars, planets, etc.... Unit 13: CSI: Northwest Design and complete scientific Forensic Science investigation

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Units are subject to change based upon changes in curriculum.

COURSE POLICIES

All assignments can be made up within 5 school days.

Class Rules

- 1. Follow all directions first time given.
- 2. Refrain from talking in the No Talking Zones. (Hall, Restroom and Cafeteria)
- 3. Raise your hand and wait to be recognized before speaking or leaving seat.
- 4. Refrain from chewing gum or eating any food in class.
- 5. Keep area around your desk clean.
- 6. Respect the rights of all people and property at all times.
- 7. Respect those in authority and fellow students.
- 8. Remain seated until teacher dismisses you.





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Student Discipline Plan

Step 1: Re-teaching of Expectations, Teacher-Student Conference, Reflective Activity, Parent-Contact
Step 2: Counselor Referral, Parent Contact
Step 3: Administrator-Inquiry, Parent Contact
Step 4: After School Detention, Parent Contact
Step 5: In School Detention (ISD), Parent Contact
Step 6: Parent-Teacher Conference
Step 7: In-School Suspension (ISS), Parent Contact
Step 8: Out-of-School Suspension (OSS), Parent Contact

You will ONLY receive one (1) WARNING. Then, Step 1 begins. After step one (1), you will receive a discipline referral; and you will be disqualified from participating in PBIS activities.

GRADING SCALES (JPS AND IB)

IB Grades: Student performance for IB assessments covers a variety of tasks. All MYP designated assignments, both formative and summative, will be assessed using MYP rubrics provided in the syllabus. The score, reported numerically from 0-8, is reported once every term in an MYP report card.

JPS Grading scale: One numerical grade will be reported per course each term. The numerical equivalent of the grade will consist of three major components: (1) the average of scores on test, and (2) the average of scores on assignments (classwork, and independent work) and homework assignments. The average of scores on test will be given a weight of 50%. The average of scores on daily assignments will be given a weight of 40% for daily grades and homework is weighted at 10% for homework assignments when determining the numerical grade.

Test Grades = 4 per term

Daily Grades = 12 per term

Homework Grades = 8 per term



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COURSE MATERIALS

- 1¹/₂" Binder with dividers
- Loose leaf Paper
- 1 composition notebook
- Pencils
- Pens
- Handheld pencil sharpen
- Crayons
- Colored pencils
- Markers
- Textbook
- Workbook
- Tri-Fold Board (Science Fair)







Criterion A: Knowing and understanding

Maximum: 8

At the end of year 1, students should be able to:

i. outline scientific knowledge

ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest

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solutions to problems set in unfamiliar situations

iii. interpret information to make scientifically supported judgments.

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: i. select scientific knowledge ii. select scientific knowledge and understanding to suggest solutions to problems set in familiar situations iii. apply information to make judgments, with limited success.
3-4	The student is able to: i. recall scientific knowledge ii. apply scientific knowledge and understanding to suggest solutions to problems set in familiar situations iii. apply information to make judgments
5-6	The student is able to: i. state scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations iii. apply information to make scientifically supported judgments.
7-8	The student is able to: i. outline scientific knowledge ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations iii. interpret information to make scientifically supported judgments .



Criterion B: Inquiring and designing

Maximum: 8

At the end of year 1, students should be able to:

i. outlines an appropriate problem or research question to be tested by a scientific investigation

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- ii. outline a testable prediction using scientific reasoning
- iii. outline how to manipulate the variables, and outline how data will be collected
- iv. design scientific investigations.

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: i. selects a problem or question to be tested by a scientific investigation ii. select a testable prediction iii. state a variable iv. design a method with limited success.	
3-4	The student is able to: i. state a problem or question to be tested by a scientific investigation ii. state a testable prediction iii. state how to manipulate the variables, and state how data will be collected iv. design a safe method in which he or she selects materials and equipment.	
5-6	The student is able to: i. state a problem or question to be tested by a scientific investigation ii. outline a testable prediction iii. outline how to manipulate the variables, and state how relevant data will be collected iv. design a complete and safe method in which he or she selects appropriate materials and equipment	
7-8	The student is able to: i. outlines a problem or question to be tested by a scientific investigation ii. outline a testable prediction using scientific reasoning iii. outline how to manipulate the variables, and outline how sufficient , relevant data will be collected iv. design a logical , complete and safe method in which he or she selects appropriate materials and equipment .	



Criterion C: Processing and evaluating

Maximum: 8

At the end of year 1, students should be able to:

- i. present collected and transformed data
- ii. interpret data and outline results using scientific reasoning
- iii. discuss the validity of a prediction based on the outcome of the scientific investigation

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- iv. discuss the validity of the method
- v. describes improvements or extensions to the method.

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:	
	i. collects and present data in numerical and/or visual forms	
	ii. interpret data	
	iii. state the validity of a prediction based on the outcome of a scientific	
	investigation, with limited success	
	iv. state the validity of the method based on the outcome of a scientific	
	investigation, with limited success	
	v. state improvements or extensions to the method that would benefit the scientific	
2.4	Investigation, with limited success.	
3-4	i connective collects and present data in numerical and/or visual forms	
	i. correctly conects and present data in numerical and/or visual forms	
	iii. stote the validity of a prediction based on the suiteene of a scientific investigation	
	iv. state the validity of the method based on the outcome of a scientific investigation	
	v. state the value of the method based on the outcome of a scientific investigation	
	investigation	
5-6	The student is able to:	
5 0	i, correctly collects, organize and present data in numerical and/or visual forms	
	ii. accurately interpret data and outline results using scientific reasoning	
	iii. outline the validity of a prediction based on the outcome of a scientific	
	investigation	
	iv. outline the validity of the method based on the outcome of a scientific	
	investigation	
	v. outline improvements or extensions to the method that would benefit the scientific	
	investigation.	
7-8	The student is able to:	
	i. correctly collects, organize, transform and present data in numerical and/ or	
	visual forms	
	ii. accurately interpret data and outline results using correct scientific reasoning	
	iii. discuss the validity of a prediction based on the outcome of a scientific	
	investigation	
	iv. discuss the validity of the method based on the outcome of a scientific	
	investigation	
	v. describes improvements or extensions to the method that would benefit the	
	scientific investigation.	



Criterion D: Reflecting on the impacts of science

Maximum: 8

- At the end of year 1, students should be able to:
- i. summarizes the ways in which science is applied and used to address a specific problem or issue

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ii. describe and summarize the various implications of using science and its application in solving a

specific problem or issue

iii. apply scientific language effectively.

iv. document the work of others and sources of information used.

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, with limited success:	
	i. state the ways in which science is used to address a specific problem or issue	
	ii. state the implications of using science to solve a specific problem or issue,	
	interacting with a factor	
	iii. apply scientific language to communicate understanding	
	iv. document sources.	
3-4	The student is able to:	
	i. state the ways in which science is used to address a specific problem or issue	
	ii. state the implications of using science to solve a specific problem or issue,	
	interacting with a factor	
	iii. sometimes apply scientific language to communicate understanding	
	iv. sometimes document sources correctly.	
5-6	The student is able to:	
	i. outlines the ways in which science is used to address a specific problem or issue	
	ii. outline the implications of using science to solve a specific problem or issue,	
	interacting with a factor	
	iii. usually apply scientific language to communicate understanding clearly and	
	precisely	
	iv. usually document sources correctly.	
7-8	The student is able to:	
	i. summarizes the ways in which science is applied and used to address a specific	
	problem or issue	
	ii. describe and summarize the implications of using science and its application to	
	solve a specific problem or issue, interacting with a factor	
	iii. consistently apply scientific language to communicate understanding clearly and	
	precisely	
	iv. document sources completely .	



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Please sign and date this form acknowledging the receipt and understanding of all of the information provided. Return to the science teacher.

Print Student Name	Signature	Date
Print Parent/ Guardian Name	Signature	Date