



Marietta City Schools

District Unit Planner

Everything on the unit planner must be included on the unit curriculum approval statement.

Science Grade 6

Unit title	<i>Solar System and Beyond</i>	MYP year	1	Unit duration (hrs)	22.5 Hours
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GSE Standards

Standards

S6E1. Obtain, evaluate, and communicate information about current scientific views of the universe and how those views evolved.

- Ask questions to determine changes in models of the Earth's position in the solar system, and origins of the universe as evidence that scientific theories change with the addition of new information. (Clarification statement: Students should consider Earth's position in geocentric and heliocentric models and the Big Bang as it describes the formation of the universe.)
- Develop a model to represent the position of the solar system in the Milky Way galaxy and in the known universe.
- Analyze and interpret data to compare and contrast the planets in our solar system in terms of: size relative to Earth, surface and atmospheric features, relative distance from the sun, and ability to support life.
- Develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.
- Ask questions to compare and contrast the characteristics, composition, and location of comets, asteroids, and meteoroids.

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)

In fourth grade, students investigate the following:

S4E1. Obtain, evaluate, and communicate information to compare and contrast the physical attributes of stars and planets.

- Evaluate strengths and limitations of models of our solar system in describing relative size, order, appearance, and composition of planets and the sun. (Clarification statement: Composition of planets is limited to rocky vs. gaseous.)

Concepts/Skills to be Mastered by Students

- Origins of the universe
- Milky Way Galaxy
- Engineering & Technology
- Gravity
- Inertia

- Formation of the Solar System
- Structure of the Solar System

Key Vocabulary: (KNOWLEDGE & SKILLS)

Big Bang, singularity, theory, hypothesis, asteroid, comet, coma, meteor, gravity, inertia, rotation, revolution, tilt, orbit, ellipse, elliptical, heliocentric, geocentric, terrestrial, gas, dwarf planet, asteroid belt, astronomical units, Kuiper belt, relative size, relative distance, scale

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

Earth is the only planet in our solar system that is able to support life.

Unit Phenomena (LEARNING PROCESS)

Celestial Objects from Different Perspectives -Resource: Solar System Google Expedition
How/why do our planets orbit the sun?

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)

Students may confuse the characteristics of asteroids, comets, and meteoroids.

Students may not comprehend the concept of inertia.

Students may understand that gravitational force causes Earth to pull objects towards it, but may not be aware that objects also pull the Earth towards them.

Students may not conceptualize the size, scale, and proportions of the universe, galaxy, solar system, and the objects within it.

Students may confuse the terms rotation and revolution.

Students may exaggerate models of Earth’s elliptical orbit.

Students may wonder why we don’t fly off the surface of the Earth.

Key concept	Related concept(s)	Global context
<p align="center">Systems</p> <p>Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.</p>	<p>Movement (MYP) Models (MYP/CCC)</p>	<p align="center">Scientific and Technical Innovation</p> <p>Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.</p>
Statement of inquiry		
<p>Scientific and technical advances have led to changes in the models used to explain the motion and orientation of objects in space.</p>		
Inquiry questions		

Factual—

What is the difference between the geocentric and heliocentric model?
 What is the solar system’s position in the Milky Way?
 What are asteroids, comets, and meteors and how do they differ?
 What is inertia?
 What are the major features of the planets in our solar system relative to the Earth (surface, atmospheric, distance from the sun?)

Conceptual—

How did the universe form?
 Why was the geocentric theory disproved?
 How do gravity and inertia govern the motion of objects in the solar system?
 Why do objects appear to move across our sky?
 Why is Earth able to sustain life when compared with other planets in our solar system?

Debatable-

Which is the most dangerous: asteroids, comets, or meteors?
 If the Earth were no longer habitable, which celestial body would humans best adapt to?

MYP Objectives	Assessment Tasks	
<i>What specific MYP objectives will be addressed during this unit?</i>	Relationship between summative assessment task(s) and statement of inquiry:	<i>List of common formative and summative assessments.</i>
Sciences Sciences Design Design	Modeling Tasks (A) Gravity and Inertia Model (A) Solar System and Beyond Unit Assessment (A,D) Science Fair (B) / Engineering Fair (A,B)	<u>Formative Assessment(s):</u> CFA 1 CFA 2 <u>Summative Assessment(s):</u> Unit Exam
Approaches to learning (ATL)		

Category: Thinking

Cluster: Critical-Thinking

Skill Indicator: Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
Origins of the Universe Geocentric vs. Heliocentric Theory	Big Bang Notes Geocentric vs. Heliocentric Notes	Scaffold notes for special education and ESOL
Our Cosmic Address Motion of Objects in the Solar System	Learning Our Cosmic Address Day/Night Sky Observations Modeling Planetary Motion	Scaffold notes for special education and ESOL
Exploring the Solar System	Inner & Outer Planets Notes and Readings Google Solar System Expedition (DE SOS Strategy) Planet Project	Scaffold notes for special education and ESOL

Content Resources

Discovery Education Science Techbook - Unit 7 Our Solar System and Beyond