Marietta City Schools

2025–2026 District Unit Planner

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

Science Grade 6 Advanced Studies

Unit title	Solar System and Beyond	**MYP year**	1	**Unit duration (hrs)**	20.25 Hours

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.
a. Ask questions to determine changes in models of 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.)

b. Develop a model to represent the position of the solar system in the Milky Way galaxy and in the known universe.
c. 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.
d. Develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.
e. Ask questions to compare and contrast the characteristics, composition, and location of comets, asteroids, and meteoroids.

S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth. (Spiraled in each unit)
a. Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.

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.
d. 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.)

MCS Gifted Standards:

MCS.Gifted.S5A. Explore personal beliefs, feelings, and understanding of self, regarding one's own unique giftedness.	MCS.Gifted.S2C. Develop and apply the affective components of creative thinking: risk-taking, curiosity, complexity, and imagination.	MCS.Gifted.S4C. Establish a common goal utilizing strengths of each group member.	MCS.Gifted.S3A. Develop and apply core critical thinking skills of metacognition, observation, questioning, prediction, analysis, interpretation, inference, summarization, evaluation, synthesis, explanation, and transference.	MCS.Gifted.S3B. Develop critical thinking, inductive and deductive reasoning to analyze and evaluate logical reasoning within a variety of problems and dilemmas.	MCS.Gifted.S3C. Use a variety of strategies for solving authentic, complex, real world problems through evaluative thinking and the engineering design processes.

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

Spiral DCI - Human Energy Needs

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)
Humans impact the physical environment in many ways causing changes in soil erosion, air quality, water quality and many other natural resources. How can we expand the use of natural resources, such as hydro, solar, wind, geothermal, and tidal as sources of energy without contributing to pollution of land, air, or water?

Unit Phenomena (LEARNING PROCESS)
Why is Earth the only planet in our solar system that is able to support life?

CER: Students answer the phenomenon in a Claim-Evidence-Reasoning constructed response as a formative assessment. Allow students to make edits to their constructed response throughout the unit for a final submission.

Capstone Connective Theme: Energy Harvested in Our Solar System

UN Sustainable Development Goals:
Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all.
Goal 12 - Ensure sustainable consumption and production patterns.

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
Systems 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.	Movement (MYP) Models (MYP/CCC)	**Scientific and Technical Innovation** 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.

Statement of inquiry

Scientific and technical advancements have led to changes in the models used to explain the motion and orientation of objects in space.

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 can we explain the processes that led to the early conditions on Earth?
Why is Earth's composition unique compared to other planets in our solar system?
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?

Debatable-

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

MYP Objectives	Assessment Tasks	
*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Criterion A: Knowing and Understanding 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 C: Processing and Evaluating 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 iv. discuss the validity of the method v. describe improvements or extensions to the method Criterion D: Reflecting on the Impacts of Science iii. apply scientific language effectively	Students will plan and carry out investigations and develop models to demonstrate their understanding about current scientific views of the universe and how those views evolved. Students will evaluate models and their effectiveness in explaining the motion and orientation of objects in space.	**Formative Assessment(s): Teacher specific** Formation of the Universe CER FA - Our Cosmic Address FA - Big Band, Helio/GeoCentric Theories **Summative Assessment(s):** CFA (Mid-Unit Assessment)- Compare and Contrast Planets CFA (Mid-Unit Assessment)-- Compare and Contrast characteristics of Space Objects (Asteroids, Comets, Meteors, etc.) Solar System and Beyond Unit Assessment Paper I and Paper II

outcome of the scientific investigation iv. discuss the validity of the method v. describe improvements or extensions to the method Criterion D: Reflecting on the Impacts of Science iii. apply scientific language effectively		

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
a. Ask questions to determine changes in models of Earth's position in the solar system, and origins of the universe as evidence that scientific theories change with the addition of new information.	Phenomenon: Photos of Celestial Objects from Different Perspectives PowerPoint presentation with pictures and guiding questions. Students will learn how to ask questions about phenomena. Formation of the Universe Claim-Evidence-Reason (CER)	• Capstone Connections • Discovery Education High School Environmental Science Techbook • Extensions – Enrichment Tasks/Projects • NGSS Case Study 7: Gifted and Talented Students • Next Generation Science Standards: "All Standards, All Students"
b. Develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.	Investigating Gravity and Inertia- MYP B Inquiring and Designing	
c. 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.	Relative Distance from the Sun: Draw the Solar System / Solar System Scale Model Planets in Our Solar System: How Big are the Planets? MYP C- Processing and Evaluating	

Content Resources

Georgia Grade 6 Science Solar System and Beyond Instructional Segment

Discovery Education Grade 6 Science Techbook

Discovery Education High School Environmental Science Techbook

Capstone Connections

Students will be introduced to the Capstone project and the United Nation Global Goals. Students will select three of the Global Goals that interest them and begin researching those three Global Goals.