# MMS Science 7 Subject Group Overview

| **Unit Name** | Ecology and Biomes | Cells and Human Body | Genetics | Natural Selection | Classification |
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| **Time Frame** | 9 Weeks | 9 Weeks | 8 Weeks | 5 Weeks | 5 Weeks |
| **Standards** | S7L4.a., b., c., d. | S7L2.a., b., c. | S7L3.a., b., c. | S7L3.c. S7L5.a., b., c. | S7L1.a., b. |
| **Science & Engineering Practices** | Science & Engineering Practices<br>● Students will construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem.<br>● Students will develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem.<br>● Students will analyze and interpret data to provide evidence for how resource availability, disease, climate, and human activity affect individual organisms, populations, communities, and ecosystems.<br>● Students will ask questions to gather and synthesize information from multiple sources to differentiate between Earth's major terrestrial biomes and aquatic ecosystems. | Science & Engineering Practices<br>● Students will develop a model and construct an explanation of how cell structures contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste.<br>● Students will develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.<br>● Students will construct an argument that systems of the body interact with one another to carry out life processes. | Science & Engineering Practices<br>● Students will construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.<br>● Students will develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation. | Science & Engineering Practices<br>● Students will ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding.<br>● Students will use mathematical representations to evaluate explanations of how natural selection leads to changes in specific traits of populations over successive generations.<br>● Students will construct an explanation based on evidence that describes how genetic variation and environmental factors influence the probability of survival and reproduction of a species.<br>● Students will analyze and interpret data for patterns in the fossil record that document the existence, diversity, and extinction of organisms and their relationships to modern organisms. | Science & Engineering Practices<br>● Students will develop and defend a model that categorizes organisms based on common characteristics.<br>● Students will evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals). |

Published: 8,2025 Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.

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| | **Approaches To Learning Instructional Strategies** | **Critical Thinking:** Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.<br>**Research:** Finding, interpreting, judging and creating information.<br>**Collaboration:** Working effectively with others.<br>**Research:** Collect and analyze data to identify solutions and make informed decisions. | **Critical Thinking:** Use models and simulations to explore complex systems and issues.<br>Gather and organize relevant information to formulate an argument.<br>**Research:** Finding, interpreting, judging and creating information.<br>**Collaboration:** Working effectively with others.<br>**Research:** Collect and analyze data to identify solutions and make informed decisions. | **Critical Thinking:** Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.<br>**Research:** Collect and analyze data to identify solutions and make informed decisions.<br>**Collaboration:** Working effectively with others.<br>**Research:** Finding, interpreting, judging and creating information. | **Critical Thinking:** Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.<br>**Communication:** Collaborate with peers and experts using a variety of digital environments and media.<br>**Collaboration:** Working effectively with others.<br>**Research:** Collect and analyze data to identify solutions and make informed decisions. | **Critical Thinking:** Use models and simulations to explore complex systems and issues<br>**Research:** Collect and analyze data to identify solutions and make informed decisions.<br>**Collaboration:** Working effectively with others.<br>**Research:** Collect and analyze data to identify solutions and make informed decisions.<br>**Research:** Finding, interpreting, judging and creating information. |
| | **Statement of Inquiry** | Ecosystem sustainability is impacted by environmental changes locally and globally.<br>**Phenomenon:** How do the choices we make impact our ecosystems?<br>How are biomes impacted by changes in climate, resource availability, and human activity?<br>**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 summative submission. | Advances in science and technology have led to a greater understanding of how cellular and body systems interact to function and maintain balance within an organism.<br>**Phenomenon:** A wound on your skin heals over time.<br>**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 summative submission. | The relationship between chromosomes, genes, alleles, and traits can be understood by examining patterns of inheritance.<br>**Phenomenon:** How is my phenotype influenced by my parents' genotypes?<br>**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 summative submission. | The fossil record can be used as evidence to determine the relationships, patterns, and changes in organisms over time.<br>**Phenomenon:** How have some bacteria become resistant to antibiotics?<br>**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 summative submission. | Structure and function can be used to identify and classify organisms based upon similar characteristics.<br>**Phenomenon:** How/why do we classify all life into six kingdoms?<br>**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 summative submission. |

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| | **Global Context** | **Globalization and Sustainability**<br>Students will explore the interconnectedness of human-made systems and communities; the relationship between local and global processes; how local experiences mediate the global; the opportunities and tensions provided by world interconnectedness; the impact of decision-making on humankind and the environment. | **Scientific and Technical Innovation**<br>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. | **Identities and Relationships**<br>Students will explore identity; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities and cultures; what it means to be human. | **Orientation in time and space**<br>Students will explore personal histories; homes and journeys; turning points in humankind; discoveries; explorations and migrations of humankind; the relationships between, and the interconnectedness of, individuals and civilizations, from personal, local and global perspectives. | **Identities and Relationships**<br>Students will explore identity; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities and cultures; what it means to be human. |
| | **Key Concepts** | **Systems and system models (MYP/CCC)**<br>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. | **Systems and system models (MYP/CCC)**<br>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. | **Relationships (MYP)**<br>Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences. | **Change (MYP/CCC)**<br>Change is a conversion, transformation or movement from one form, state, or value to another. Inquiry into the concept of change involves understanding and evaluating causes, processes and consequences. | **Relationships (MYP)**<br>Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences. |
| | **Related Concepts** | Patterns (MYP/CCC)<br>Environment (MYP) | Form/Structure (MYP/CCC)<br>Function (MYP/CCC)<br>Interaction (MYP) | Patterns (MYP/CCC)<br>Transformation (MYP) | Patterns (MYP/CCC)<br>Evidence (MYP) | Form/Structure (MYP/CCC) Function (MYP/CCC) |
| | **Disciplinary Core Ideas** | <u>Connecting Core Ideas</u><br>● Interdependent relationships in ecosystems<br>● Cycles of matter and energy transfer in ecosystems<br>● Ecosystem dynamics, functioning, and resilience<br>● Human impact on ecosystems<br>● Biomes | <u>Connecting Core Ideas</u><br>●Cell structure and function<br>● Levels of organization<br>● Organ systems<br>● Growth and development of organisms<br>● Sexual and asexual reproduction | <u>Connecting Core Ideas</u><br>● Inheritance of traits<br>● Genes and chromosomes<br>● Sexual and asexual reproduction<br>● Variation of traits<br>● Selective breeding (artificial selection) | <u>Connecting Core Ideas</u><br>● Inheritance of traits<br>● Variation of traits<br>● Natural selection<br>● Adaptation<br>● Evidence of common ancestry and diversity | <u>Connecting Core Ideas</u><br>● Cell structure and function<br>● Levels of organization<br>● Energy transfer<br>● Diversity<br>● Variation of traits |

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| | **MYP Assessments/ Performance Tasks** | **Common Assessments Title and Criterion:**<br>Ecology Lab Report (Science: B,C)<br>Ecology Common Formative Assessments<br>Ecology Unit Assessment Paper 1 combined with Biomes (Science: A,D)<br>Biome in a Bottle (Design: A-D)<br>Biomes Common Formative Assessment<br>Climate Migrant Project | **Common Assessments Title and Criterion:**<br>Cells Common Formative Assessment<br>Passive Transport Lab Report (Science: B,C)<br>Cells & Cell Processes Unit Assessment Paper I and Paper II (Science: A,D)<br>The Bionic Leg/Arm (Design: A-D)<br>Human Body Common Formative Assessments<br>Human Body Unit Assessment Paper I (Science: A,D) | **Common Assessments Title and Criterion:**<br>Genetics Common Formative Assessment<br>Punnett Square Common Formative Assessment<br>Genetics Unit Assessment Paper I and Paper II (Science: A,D) | **Common Assessments Title and Criterion:**<br>Natural Selection Common Formative Assessment<br>Natural Selection Labs & SIMS (Science: B,C)<br>Natural Selection Unit Assessment Paper I and Paper II (Science: A,D) | **Common Assessments Title and Criterion:**<br>Classification Common Formative Assessment<br>Classification Project (Science: A) |
| | **Differentiation For Tiered Learners** | Discovery Education Science Techbook<br>Mosa Mack Science<br>NGSS Case Studies for Differentiated Learners<br>NGSS: All Standards, All Students<br>Extensions - Enrichment Tasks/Projects<br>SOR strategies | Discovery Education Science Techbook<br>Mosa Mack Science<br>NGSS Case Studies for Differentiated Learners<br>NGSS: All Standards, All Students<br>Extensions - Enrichment Tasks/Projects<br>SOR strategies | Discovery Education Science Techbook<br>Mosa Mack Science<br>NGSS Case Studies for Differentiated Learners<br>NGSS: All Standards, All Students<br>Extensions - Enrichment Tasks/Projects<br>SOR strategies | Discovery Education Science Techbook<br>Mosa Mack Science<br>NGSS Case Studies for Differentiated Learners<br>NGSS: All Standards, All Students<br>Extensions - Enrichment Tasks/Projects<br>SOR strategies | Discovery Education Science Techbook<br>Mosa Mack Science<br>NGSS Case Studies for Differentiated Learners<br>NGSS: All Standards, All Students<br>Extensions - Enrichment Tasks/Projects<br>SOR Strategies |