|  | **NGSS Life** | **MI Life** | **NGSS ESS** | **MI ESS** | **NGSS Physical** | **MI Physical** | **Engineering**  **Design NGSS** |
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| **HS** |  |  |  |  |  |  |  |
| **HS** | **HS.SF** Structure and Function  **HS.IVT** Inheritance and Variation of Traits  **HS.MEOE** Matter and Energy in Organisms and Ecosystems  **HS.IRE** Interdependent Relationships in Ecosystems  **HS.NSE** Natural Selection and Evolution | **B2 Organization and Development of Living Systems** (Transformation of Matter and Energy in Cells; Organic Molecules;  Maintaining Environmental Stability; Cell Specialization; Living Organism Composition)  **B3 Interdependence of Living Systems and the Environment**  (Photosynthesis and Respiration; Ecosystems;  Element Recombination;  Changes in Ecosystems;  Populations)  **B4 Genetics (**Genetics and Inherited Traits; DNA;  Cell Division – Mitosis and Meiosis)  **B5. Evolution and Biodiversity** (Theory of Evolution; Molecular Evidence; Natural Selection) | **HS.SS** Space Systems  **HS.HE** History of Earth  **HS.ES** Earth’s Systems  **HS.WC** Weather and Climate  **HS.HI** Human Impacts | **E2 Earth Systems** (Earth Systems Overview; Energy in Earth Systems; Biogeochemical Cycles;  Resources and Human Impacts on Earth Systems)  **E3 Solid Earth** (Advanced Rock Cycle; Interior of the Earth; Plate Tectonics Theory; Earthquakes and Volcanoes)  **E4 Fluid Earth**  (Hydrogeology; Oceans and Climate; Severe Weather)  **E5 The Earth in Space and Time (**The Earth in Space;  The Sun; Earth History and Geologic Time; Climate Change) | **HS.SPM** Structure and Properties of Matter  **HS.CR** Chemical Reactions | **C2 Forms of Energy**  C2.2 Molecules in Motion  **C3 Energy Transfer and**  **Conservation** (Heating Impacts; Endothermic and Exothermic Reactions)  **C4 Properties of Matter**  (Nomenclature; Properties of Substances; Atomic Structure; Periodic Table; Neutral Atoms, Ions, and Isotopes)  **C5 Properties of Matter**  (Chemical Changes, Phase Change/Diagrams, Chemical Bonds — Trends, Acids and Bases, Carbon Chemistry) | **HS Engineering Design** |
| **HS.FI** Forces and Interactions  **HS.E** Energy  **HS.WER** Waves and Electromagnetic Radiation | **P2 Motion of Objects**  (Position; Time; Velocity)  **P3 Forces and Motion**  (Basic Forces in Nature;  Net Forces; Newton’s Third Law; Forces and Acceleration; Gravitational Interactions; Electric Charges)  **P4 Forms of Energy and Energy Transformations**  (Energy Transfer; Energy Transformation; Kinetic and Potential Energy;  Wave Characteristics;  Mechanical Wave Propagation; Electromagnetic Waves;  Wave Behavior –Reflection and Refraction; Nature of Light; Current Electricity –Circuits; Nuclear Reactions) |  |
| **8** |  |  |  |  |  |  |  |
| **MS**  **6-8** | **MS.SFIP** Structure, Function and Information Processing  **MS.MEOE** Matter and Energy in Organisms and Ecosystems  **MS.IRE** Interdependent Relationships in Ecosystems  **MS.NSA** Natural Selection and Adaptations  **MS.GDRO** Growth, Development, and Reproduction of Organisms | **6.OL Organization of Living Things** (Producers, Consumers, and Decomposers)  **7.OL Organization of Living Things** (Cell Functions;  Growth and Development;  Photosynthesis)  **6.EC Ecosystems**  (Interactions of Organisms;  Relationships of Organisms;  Biotic and Abiotic Factors;  Environmental Impact of Organisms)  **7.HE Heredity**  (Reproduction) | **MS.SS** Space Systems  **MS.HE** History of Earth  **MS.ES** Earth’s Systems  **MS.WC** Weather and Climate  **MS.HI** Human Impacts | **6.ST Earth in Space and Time (**Fossils; Geologic Time)  **6.SE Solid Earth (**Soil;Rock Formation;Plate Tectonics;  Magnetic Field of Earth)  **7.ES Earth Systems**  (Solar Energy; Human Consequences; Weather and Climate; Water Cycle)  **7.FE Fluid Earth** (Atmosphere) | **MS.SPM** Structure and Properties of Matter  **MS.CR** Chemical Reactions  **MS.FI** Forces and Interactions  **MS.EN** Energy  **MS.WER** Waves and Electromagnetic Radiation   |  | | --- | |  | | **6.CM Changes in Matter**  (Changes in State)  **7.PM Properties of Matter**  (Chemical Properties;  Elements and Compounds)  **7.CM Changes in Matter**  (Chemical Changes)  **6.EN Energy** (Kinetic and Potential Energy;  Energy Transfer)  **7.EN Energy**  (Waves and Energy;  Energy Transfer;  Solar Energy Effects) | **MS Engineering Design** |
| **7** |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |
| **5** | **5.MEOE** Matter and Energy in Organisms and Ecosystems | **5.OL Organization of Living Things** (Animal Systems)  **5.HE** **Heredity** (Inherited and Acquired Traits)  **5.EV** **Evolution**  (Species Adaptation and Survival; Relationships Among Organisms) | **5.ES** Earth’s Systems  **5.SS** Space Systems: Stars and the Solar System | **5.ES Earth Systems** (Seasons)  **5.EST** **Earth in Space and Time** (Solar System; Solar System Motion) | **5.SPM** Structure and Properties of Matter | **5.FM Force and Motion**  (Force Interactions, Force, Speed) | **3-5 Engineering Design** |
| **4** | **4.SFIP** Structure, Function, and Information Processing | **4.OL Organization of Living Things (**Life Requirements)  **4.EV Evolution (**Survival)  **4.EC Ecosystems**  (Interactions; Changed Environment Effects) | **4.ES** Earth’s Systems: Processes that Shape the Earth | **4.ST Earth in Space and Time (**Characteristics of Objects in the Sky;  Patterns of Objects in the Sky; Fossils) | **4.E** Energy  **4.W** Waves:Waves and Information | **4. EN Energy (**Forms of Energy;Energy and Temperature;Electrical Circuits)  **4.PM Properties of Matter**  (Physical Properties; States of Matter; Magnets;  Conductive and Reflective Properties)  **4.CM Changes in Matter**  (Changes in State) |  |
| **3** | **3.IRE** Interdependent Relationships in Ecosystems  **3.IVT** Inheritance and Variation of Traits: Life Cycles and Traits | **3.OL Organization of Living Things (**Structures and Functions;Classification)  **3.EV Evolution (**Environmental Adaptation) | **3.WC** Weather and Climate | **3.ES Earth Systems**  (Natural Resources;  Human Impact)  **3.SE Solid Earth (**Earth Materials;Surface Changes;  Using Earth Materials) | **3.FI** Forces and Interactions | **3.FM Force and Motion**  (Gravity; Force; Speed)  **3.EN Energy** (Forms of Energy;Light Properties;  Sound)  **3.PM Properties of Matter**  (Conductive and Reflective Properties) |  |
| **2** | **2.IRE** Interdependent Relationships in Ecosystems | **2.OL Organization of Living Things (**Life Requirements;  Life Cycles)  **2.HE Heredity** (Observable Characteristics) | **2.ES** Earth’s Systems: Processes that Shape the Earth | **2.SE Solid Earth**  (Surface Changes)  **2.FE Fluid Earth (**Water;  Water Movement) | **2.SPM** Structure and Properties of Matter | **2.PM Properties of Matter**  (Physical Properties;  Material Composition) | **K-2 Engineering Design** |
| **1** | **1.SFIP** Structure, Function and Information Processing | **1.OL Organization of Living Things (**Life Requirements;  Life Cycles)  **1.HE Heredity (**Observable Characteristics) | **1.SS** Space Systems: Patterns and Cycles | **1.ES Earth Systems**  (Solar Energy; Weather;  Weather Measurement)  **1.SE Solid Earth**  (Earth Materials) | **1.W** Waves: Light and Sound | **1.PM Properties of Matter (**Physical Properties;States of Matter; Magnets) |  |
| **K** | **K.IRE** Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment | **K.OL Organization of Living Things** (Life Requirements) | **K.WC** Weather and Climate | **K.SE Solid Earth**  (Earth Materials) | **K.FI** Forces and Interactions: Pushes and Pulls | **K.FM Force and Motion**  (Position; Gravity; Force) |  |

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