Expedition: Mars Standards Alignment

Indiana

Science and Engineering Process Standards (SEPS)

For students in grades 5th – 8th, the simulated missions and their curriculum address Science and Engineering Process Standards as students by: *performing investigations in the field or laboratory and working collaboratively as well as individually monitoring and recording progress; analyzing results and formulating solutions to problems; using results and citing data to form coherent explanations; communicating clearly and articulating ideas and methods that are generated.*

Science, Math & English/Language Arts goals and Standards

The simulated missions and the associated curriculum address the following Indiana Academic Standards and College & Career Ready Standards for students in grades 5th – 8th.

	Science	Math	ELA
5th grade	5.ESS.1 5.ESS.2 5.PS.1 5.PS.2 5.PS.4	5.NS.3 5.NS.5 5.AT.1 5.AT.5 5.AT.6 5.AT.7 5.DS.1	5.RN.2.2 5.RV.2.1 5.W.5 5.SL.2.1
6th grade	6.PS.3 6.PS.4 6.ESS.1 6.ESS.3 6-8.E.1 6-8.E.3 6.LS.4 6.LS.2 6.PS.3	6.NS.1 6.AF.8	6.RN.1 6.RV.1 6.RV.2.1 6.RV.3.1 6.W.2 6.SL.3.1
7th grade	6-8.E.1 6-8.E.3 7.ESS.5 7.ESS.1	7.C.8	7.RN.1 7.RV.1 7.RV.2.1 7.RV.3.1 7.W.2 7.SL.3.1
8th grade	6-8.E.1 6-8.E.3 8.ESS.3	8.C.2 8.AF.8	8.RN.1 8.RV.1 8.RV.2.1 8.RV.3.1 8.W.2 8.SL.3.1

Standards Alignment: Team Breakdown		
Team	**Next Generation Science Standards**	**Common Core Standards**
ROV	**MS-ETS1-1**. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. **MS-ETS1-2**. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. **MS-ETS1-3**. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	**RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ETS1-3) **RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
BOT	**MS-ETS1-2**. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**RST.6-8.9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-2),(MS-ETS1-3) **WHST.6-8.9** Draw evidence from informational texts to support analysis, reflection, and research. (MS-ETS1-2)
LS	**MS-LS1-5:** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	**RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. **RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. **SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. **MP.2:** Reason abstractly and quantitatively. **RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

GEO		**RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. **MP.2:** Reason abstractly and quantitatively. **RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.
Communications	**MS-PS4-2**. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials	**RST.6-8.9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-PS4-3)
Biology	**MS-PS1-2**. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. **MS-LS1-2**. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. **MS-LS1-3**. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	**RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. **RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.
Medical:	**MS-LS1-1**. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. **MS-LS1-2**. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. **MS-LS3-1.** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	**RST.6-8.1:** /cite specific textual evidence to support analysis of science and technical texts. **RST.6-8.2:** Determine the central idea or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. **RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

-Weather	**MS-ESS2-5.** Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	**WHST.6-8.7:** Conduct short research projects to answer a question (including a self-generated question) drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. **SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. **MP.2:** Reason abstractly and quantitatively.
Navigation	**MS-PS2-2**. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. **WHST.6-8.1:** Write arguments focused on discipline-specific content. **MP.2:** Reason abstractly and quantitatively. **RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.