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| **InfiniD Lab Preview**  **- 7th Grade -** |

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| Core Missions   * SEEd Strand 1 - Convoy * SEEd Strand 2 - Under Cover * SEEd Strand 3 - Intravenous * SEEd Strand 4 - Mutation * SEEd Strand 5 - Invaders | Supplementary Missions   * SEEd Strand 4 - Overgrowth\* * Math - Anomaly\* * Social Studies 1 - Olympus\* |

Expectations

* SCHEDULE MISSION: Coordinate schedule with flight director based on when you will teach each standard
* INTRO YOUR LESSON: As you teach your lesson(s), reference the upcoming mission.
  + Minimum (5 to 10 minutes): share the power statement (found below) that shows students how the lesson will impact their mission.
  + Optimal (30 to 60 minutes): personally review “Mission Prep and Summary” and other mission resources to better tease the upcoming mission during classroom instruction when possible.
* ASSIGN ROLES: Follow instructions in teacher prep sheet (10 to 15 minutes)
* DEBRIEF: Follow instructions in teacher prep sheet (10 to 30 minutes)

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| **SEEd Strand 1 - Convoy** | |
| **Strand Strand 7.1:** Forces are push or pull interactions between two objects.  **SEEd 7.1.1:** A change in an object's motion is dependent on the mass of the object and the sum of the forces acting on it.  **SEEd 7.1.2:** The motion of two colliding objects in a system.  **SEEd 7.1.3:** Nature of fields that exist between objects that exert forces on each other even though the objects are not in contact.  **SEEd 7.1.4:** The strength of electric and magnetic forces. | **Key Prep**   * To change the force an object will have on collision you must change either the mass or the speed it is travelling. * Newton’s laws of motion. |
| **Summary**  Defend an emergency convoy travelling through an asteroid field from rogue asteroid impacts. | |
| **Example Power Statement**  *“Your understanding of force and how to manipulate it will determine whether you and the ships you are assigned to protect survive.”* | |

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| **SEEd Strand 2 - Under Cover** | |
| **SEEd 7.2.1:** Rocks are constantly changing.  **SEEd 7.2.2:** The speed at which Earth’s surface changes can vary.  **SEEd 7.2.3:** Structures are engineered to withstand geologic hazards.  **SEEd 7.2.4:** The interior of the Earth has layers.  **SEEd 7.2.5:** Patterns found on Earth are evidence of plate tectonics.  **SEEd 7.2.6:** Layers of rock provide evidence of Earth’s history. | **Key Prep**   * The different types of plate boundaries, and what phenomena occur there * Where volcanoes, earthquakes, mountains and tsunamis are found * What convergent and divergent boundaries do on continental and oceanic plates |
| **Summary**  The students will go undercover to stop a massive invasion on an allies’ planet using their knowledge of plate tectonics | |
| **Example Power Statement**  *“You need to know as much as possible about plate tectonics in order to save this struggling alien race.”* | |

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| **SEEd Strand 3 - Intravenous** | |
| **Strand 7.3: Structures and function of life**  **SEEd 7.3.1: All living things are made of cells.**  **SEEd 7.3.2: Cells are systems that complete the functions necessary for life.**  **SEEd 7.3.3: Body systems complete the functions necessary for life.** | **Key Prep**   * What organs are vital organs and why * How the body is affected by sickness * How bacterial and viral infections differ |
| **Summary**  Students will navigate the blood vessels of an important Eribus diplomat (alien) that has recently collapsed to try and save his life. | |
| **Example Power Statement**  *“There is no way you will be able to save anyone if you do not understand how cells and organs work.”* | |

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| **SEEd Strand 4 - Mutation** | |
| **SEEd 7.4.4:** Obtain, evaluate, and communicate information about the technologies that have changed the way humans affect the inheritance of desired traits in organisms. | **Key Prep**   * Technology used in genetic engineering by humans * Human’s use of selective breeding on various species through time * Humans take genes or traits from one organism and place them in another organism * The newest technology currently used to alter DNA |
| **Summary**  Students will travel back in time to compare and contrast genetic differences in animals from plants and animals in our time. | |
| **Example Power Statement**  *“You will need to understand how traits can be passed on in order to succeed in this mission.”* | |

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| **SEEd Strand 5 - Invaders** | |
| **SEEd 7.5.1:** Certain traits can affect an organism probability of survival.  **SEEd 7.5.2:** Fossil record gives evidence that life has changed over time.  **SEEd 7.5.3:** Modern and ancient body structures gives evidence of evolutionary relationships.  **SEEd 7.5.4:** There are similarities and differences in embryo development across different species. | **Key Prep**   * The principles of natural selection and how they lead to predominance of traits * Fossil records show evolution and allow inference towards how traits were developed * How extreme environmental factors can cause dramatic changes in a species * How food sources and their availability would affect a population |
| **Summary**  Students will need to use their knowledge of evolution and fossil records to learn about an unknown invasive species at its origin. | |
| **Example Power Statement**  *“The more familiar you are with fossils and evolution, the better chance you’ll have of saving this planet.”* | |

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| **SEEd Strand 4 - Overgrowth\*** | |
| **Standard 7.4.3:** Develop and use a model to describe why genetic mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism. Emphasize the conceptual idea that changes to traits can happen because of genetic mutations. Specific changes of genes at the molecular level, mechanisms for protein synthesis, and specific types of mutations will be introduced at the high school level. | **Key Prep**   * Basic understanding of photosynthesis of plants * 5 elements that encourage bacterial growth * Water: Water is needed to help bacteria grow * Food: Bacteria needs a food source (ours grows rapidly because it takes advantage of endless photosynthesis of the algae) * Oxygen: Bacteria can either be anaerobic or aerobic (ours is aerobic) * Temp: Between 60 degrees and 110 degrees fahrenheit * Ph levels: 0 = acid, 14 = alkaline - Bacteria grow at neutral 4.5 - 10.0 * (Optional) Base 2 exponential functions |
| **Summary**  Students will investigate a planet that was consumed by an unknown algae in only two weeks. | |
| **Example Power Statement**  *“You are the only ones that can keep this algae from consuming other planets, and you will need to know about how algae can behave in order to succeed.”* | |

\*This mission was written for a different grade, but has also been popular with this grade. Available upon request.

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| **Social Studies 1 - Olympus\*** | |
| **Social Studies:** Role of government, impact of culture, and social responsibility. | **Key Prep**   * Discuss ideas around what makes some civilizations more successful than others * Basic understanding of human rights |
| **Summary**  Students are being sent to investigate a planet that has strict laws against scientific discovery and has questionable cultural practices that put children’s lives at risk. | |
| **Example Power Statement**  *“Your ability to negotiate and your understanding of human rights will determine your survival in this mission.”* | |

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| **Math - Anomaly\*** | |
| **Math:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | **Key Prep**   * Be able to solve a single variable equation (XXX km, XXX m/s = time to impact) and/or compare large ratios * Importance of standing up for the rights of others |
| **Summary**  Save a planet from incoming asteroids by providing the planetary defense system with the unit of measurement needed to properly target the fragments. | |
| **Example Power Statement**  *“If you do not know how to solve a single variable equation, the people on this planet will not survive.”* | |

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