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| **InfiniD Lab Preview**  **- 9th Grade -** |

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| Core Missions   * Earth Science 1 - Nova * Earth Science 3 - Surge * Biology 4 - Choke * Biology 5 - Cast Away | Supplementary Missions   * Social Studies - Olympus\* * Science 1 - Overgrowth\* * Math - Anomaly\* |

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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| **Earth Science 1 - Nova** | |
| **Earth Science Standard 1**  Students will understand the scientific evidence that supports theories that explain how the universe and the solar system developed. They will compare Earth to other objects in the solar system. | **Key Prep**   * Describe the big bang theory and the evidence that supports this theory (e.g., cosmic background radiation, an abundance of elements, distance/redshift relation for galaxies). * Describe the nebular theory of solar system formation and the evidence supporting it (e.g., solar system structure due to gravity, motion, and temperature; composition and age of meteorites; observations of newly forming stars). * Explain that heavy elements found on Earth are formed in stars. |
| **Summary**  Students will visit a Nebula where stars are forming. They will get to witness the creation and destruction of stars. | |
| **Example Power Statement**  *“Your knowledge of stars and how they are formed will keep you alive in this mission.”* | |

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| **Earth Science 3 - Surge** | |
| **Earth Science - Standard 3:** Students will understand the atmospheric processes that support life and cause weather and climate.  **Objective 1:** Relate how energy from the Sun drives atmospheric processes and how atmosp**heric currents transport matter and transfer energy.**  **Objective 2:** Describe elements of weather and the factors that cause them to vary from day to day. | **Key Prep**   * How different types of storms are initiated (hurricanes, thunderstorms, tornadoes, fog, etc.) * How the Sun’s energy and radiation affects the Earth * Magnitude of solar rays/winds * High pressure and low pressure systems |
| **Summary**  Students will travel to a planet named Tora to observe how solar flares from a nearby star is causing changes in the weather and attempt to prevent its impact using artificial ozone. | |
| **Example Power Statement**  *“The evacuation is currently underway, and you will need to understand weather and climate in order to help everyone get off the planet safely.* | |

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| **Biology 4 - Choke** | |
| **Biology 9.4:** Changes in DNA may alter genetic expression.  **Biology 9.4.3:** Explain how the structure and replication of DNA are essential to heredity and protein synthesis. | **Key Prep**   * What organs are vital organs and why * How the body is affected by sickness * How a virus can affect the DNA of a cell |
| **Summary**  Students will be shrunken down and sent inside an Eribus crewmember (alien) that mysteriously collapsed with the rest of the crew. They will travel the blood vessels to investigate the cause and try to save their lives. | |
| **Example Power Statement**  *“Your will need to understand the basics of DNA and how cells behave in the body in order to save the Eribus crewmember.”* | |

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| **Biology 5 - Cast Away** | |
| **Objective 1:** Relate principles of evolution to biological diversity.  **Objective 2:** Cite evidence for changes in populations over time and use concepts of evolution to explain these changes  **Objective 3:** Classify organisms into a hierarchy of groups based on similarities that reflect their evolutionary relationships | **Key Prep**   * The principles of evolution and how to infer causes for these changes. * How to analyze a fossil record to show physical and environmental changes. * Ways that a genetic recombination from a mutated cell would take place * Citing evidence and mission specific, how to support biological evolution |
| **Summary**  Students will see how a severe environment can have a dramatic impact on evolution to help solve the problem of a dangerous species. | |
| **Example Power Statement**  *“The more you know about how organisms can change and evolve, the better chance you’ll have of surviving this mission.”* | |

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| **Social Studies - 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.”* | |

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

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| **Biology 1 - Overgrowth\*** | |
| **Biology Standard 1:** Students will understand that living organisms interact with one another and their environment. | **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 visit a planet recently consumed by algae. (\*Secret\*) They will discover that the algae mutated to behave like bacteria, and will need to figure out how to keep it from spreading and reverse its effects. | |
| **Example Power Statement**  *“This planet was consumed by algae in only two weeks, and other planets are now at risk. You will need to understand algae and how it behaves as much as possible in order to succeed.”* | |

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| **Math - Anomaly\*** | |
| **Math:** Understand the connections between proportional relationships, lines, and linear equations. Define, evaluate, and compare functions. | **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 equations, the people on this planet will not survive.”* | |

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