**Third Rock from the Sun**

**Unit 1**

**Objectives:**

* Recognize the different branches of earth science and how they are all connected
* Discuss the importance of earth science and the other related sciences, such as environmental science and relate them to our lives
* Review the scientific method, defining terms such as independent and dependent variables, hypothesis, theory, control, etc.
* Describe the composition and structure of Earth’s layers
* Differentiate between weight and mass
* Summarize Newton’s law of gravitation and recognize how it relates to our lives on Earth
* Differentiate between Earth’s four main spheres
* Relate the 1st and 2nd laws of thermodynamics to energy on Earth
* Describe the cycle of energy throughout the biosphere, beginning with sun as the external energy source
* Identify the nitrogen, carbon, phosphorus, and water cycles
* Explain the importance of the cycling of elements from one state to another (carbon in CO2, CH4, C6H12O6, etc.)
* Describe the transfer of energy between trophic levels
* Create a food web and apply knowledge of the 10% rule of energy transfer to your organisms
* Evaluate diets, using mathematics and conversions, to determine the most energy efficient food plan

**Next Generation Science Standards:**

* HS-ESS2-1 Develop a model to illustrate how Earth’s internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features
  + Will expand upon this in plate-tectonics
* HS-ESS2-3 Develop a model based on evidence of Earth’s interior to describe the cycling of matter by thermal convection
  + Will expand upon in plate-tectonics
* HS-ESS2-6 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere
* HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity
  + Will expand upon in the atmosphere section

**Common Core:**

(Focused on grades 11-12, as the 9-10 standards were the focus in Biology 1)

* RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions that author makes and to any gaps or inconsistencies in the account
* RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms
* RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
* RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11-12 texts and topics*.
* RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
* WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
* WHST.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
  + Will be continued throughout the class