Laarman Lesson Plan

Class: Earth Science Unit: Course Introduction Standards: ESS1-1, ESS1-2

Topic: Space Unit Intro Date: 9/6/16

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| **Materials, Prep** | Space Introduction Power Point |
| **Anticipatory Set-connection, motivation, relevance** | 1. Discussion: were the political ads true? What was the truth? How do you feel about current politicians or candidates? Why?
2. Pre-Quiz activity: after completing the quiz, compare with partners, changing answers as needed.
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| **Procedure**  | Space Introduction PowerPoint: Important concepts |

Topic: The Origins of the Universe Date: 9/7/16

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| **Materials, Prep** | Universe Multimedia, balloons  |
| **Essential Question** | How did the universe begin? Or was it always here? |
| **Anticipatory Set****-connection, motivation, relevance** | Today we will consider some of the observations that have been made of the Universe and you will see if you can make a hypothesis on the origins of the Universe base on these observations. |
| **Procedure**  | 1. Discuss, model note-taking
2. Multimedia: The Doppler Effect and redshift (video clip in Montage playlist-Doppler, Hubble, and Nye)
3. Quick lab demonstration (from p. 795)
4. Multimedia: Cosmic microwave background (Video clip at <http://www.pbslearningmedia.org/resource/ess05.sci.ess.eiu.microwave/evidence-for-the-big-bang-theory/>)
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| **Closure** | 1. Model small-group discussion
2. Discussion: what was something new that you learned today?
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Topic: The Origins of the Universe Date: 9/8/16

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| **Materials, Prep** | Universe Multimedia |
| **Procedure**  | 1. Multimedia: the composition of the matter of the Universe
2. Discussion: What might one conclude about the origins of the Universe based on these observations?
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| **Homework** | Write a ½ page description of how the observations we’ve studied the past two days support the Big Bang theory. Due Monday. |

Topic: The Size of the Universe Date: 9/9/16

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| **Essential Question** | How big is the universe? |
| **Anticipatory Set****-connection, motivation, relevance** | What kinds of numbers were thrown out over the past couple of days? How far away were some of the objects? |
| **Procedure**  | 1. Partner activity: How much is a trillion? How long ago was a trillion seconds?
2. Khan Academy video: scale of the universe
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