

# FRANKLIN-SIMPSON HIGH SCHOOL

**Course Name:** Earth Space

**Unit Name:** Unit 1: The Big Bang

## **Objectives:**

Quality Core Physics  
3. Science in Practice

- c. Explain why experimental replication and peer review are essential to eliminate as much error and bias as possible in scientific claims.
- d. Explain the criteria that explanations must meet to be considered scientific.
- e. Explain why all scientific knowledge is subject to change as new evidence becomes available to the scientific community.

CCA 4.1 SC-HS-2.3.2

Students will:

- describe the current scientific theory of the formation of the universe (Big Bang) and its evidence;
- explain the role of gravity in the formation of the universe and its components.

The current and most widely accepted scientific theory of the mechanism of formation of the universe (Big Bang) places the origin of the universe at a time between 10 and 20 billion years ago, when the universe began in a hot dense state. According to this theory, the universe has been expanding since then. Early in the history of the universe, the first atoms to form were mainly hydrogen and helium. Over time, these elements clump together by gravitational attraction to form trillions of stars.

## **Purpose of the Unit:**

To give students the essential background knowledge for all of space science. The Big Bang is the foundation for the formation of the universe, and with the combined knowledge of the importance of gravity, students will be able to better grasp the units that follow.

## **Prerequisites:**

Basic understanding of what the universe is, and what is in it.

## Daily Lesson Guide

Day	Lesson Content and Objectives	Focus Questions	Critical Thinking (High Yield / Literacy /LTF/etc.)	Engagement	Assessment and/or Accommodations
1	<ul style="list-style-type: none"> <li>-Review Scientific Method</li> <li>-Discuss Theory vs. Law</li> </ul> <p><b>(3)</b></p>	<ul style="list-style-type: none"> <li>-Illustrate the Scientific Method.</li> <li>-Compare the definition of Theory and Law.</li> <li>-Determine what theories and laws are.</li> </ul>	Comprehension	<ul style="list-style-type: none"> <li>-Personal Response</li> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Check for understanding T vs. L sheet</li> </ul>
2	<ul style="list-style-type: none"> <li>-Graphing Review with class Data</li> </ul> <p><b>(3)</b></p>	<ul style="list-style-type: none"> <li>-Collect and show data on graphs.</li> <li>-Determine which type of data goes with which type of graph.</li> </ul>	Synthesis	<ul style="list-style-type: none"> <li>-Personal Response</li> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> <li>-Novelty/Variety</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Self check and turn in graphs</li> </ul>
3	<ul style="list-style-type: none"> <li>- Astronomical misconceptions</li> <li>- Give out “I can...” sheets</li> <li>- Discuss key ideas and terms of the Big Bang</li> <li>-Work on guided notes from book. Check off with me for understanding</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-What does the BBT explain?</li> <li>-What is the evidence to support it?</li> </ul>	Analysis	<ul style="list-style-type: none"> <li>-Clear/Modeled Expectations</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Talk about misconceptions as a class to assess where they are to start.</li> </ul>
4	<ul style="list-style-type: none"> <li>-Watch parts of “Beyond the Big Bang” with sheet</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-What does the BBT not try to explain?</li> <li>-Why can they not explain this?</li> </ul>	Analysis	<ul style="list-style-type: none"> <li>-Clear/Modeled Expectations</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Turn in sheets.</li> </ul>

5	<ul style="list-style-type: none"> <li>-Finish watching parts of "Beyond the Big Bang"</li> <li>-Discuss what was seen; misconceptions? New ideas?</li> <li>-Check "I can..." sheet for new ideas</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-Explain background radiation.</li> <li>-How do scientists predict the universe will end? What do they need to figure out in order to determine how it will end?</li> </ul>	Analysis	<ul style="list-style-type: none"> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Discuss “I can...” sheets.</li> </ul>
6	<ul style="list-style-type: none"> <li>-Discuss what was learned about what the evidence is that supports the Big Bang</li> <li>-Expanding Universe Lab</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-Examine how the universe is expanding based on a small scale model.</li> </ul>	Analysis	<ul style="list-style-type: none"> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> <li>-Novelty/Variety</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Turn in lab.</li> </ul>
7	<ul style="list-style-type: none"> <li>-Discuss Lab, and collect</li> <li>-Discuss Background Radiation</li> <li>-HW, How the Big Bang Works</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-Compare what the BBT does and does not state.</li> <li>-Hypothesize how scientists use the BBT to answer some of today's questions in science.</li> </ul>	Analysis Synthesis	<ul style="list-style-type: none"> <li>-Personal Response</li> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Turn in writing assignment.</li> </ul>
8	<ul style="list-style-type: none"> <li>-Review game</li> <li>-Answer any ideas that have not yet been</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-Review all focus questions.</li> </ul>	Synthesis	<ul style="list-style-type: none"> <li>-Personal Response</li> <li>-Learning With Others</li> <li>-Clear/Modeled Expectations</li> <li>-Novelty/Variety</li> </ul>	<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Class review.</li> </ul>
9	<ul style="list-style-type: none"> <li>Test</li> </ul> <p><b>( SC-HS-2.3.2)</b></p>	<ul style="list-style-type: none"> <li>-Justify all answers to focus questions.</li> </ul>	Evaluation		<ul style="list-style-type: none"> <li>-Daily warm up questions</li> <li>-“I Can...” sheets</li> <li>-Summative test.</li> </ul>

