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| **TOPIC: SCIENCE 10 NEW content** | **BIG IDEA ELABORATIONS** | **CONTENT ELABORATIONS** |
| **Energy** | * Where does energy come from and what happens to it? * How does energy in the form of radiation affect living things? * How do energy transformations affect the environment? | * **radiation:**   + ionizing versus non-ionizing   + alpha, beta, gamma * **potential:** stored energy (gravitational PE = mgh) * **kinetic:** energy of motion (translational KE = 1/2 mv2) * **transformation of energy:**   + transfer of energy in closed and open systems   + heat (Q = mc∆ T) |
| **Astronomy/Universe** | * What evidence supports the big bang theory? * How could you model the formation of the universe? * How has the advancement of technology deepened our understanding of the universe? | * **components of the universe over time:** changes to energy, matter, fundamental forces * **astronomical data and collection methods:** different types of data are collected and analyzed as evidence to support theories about the universe (e.g., radio telescopes, background microwave radiation, red and blue Doppler shift, Mars rover, SNOLAB, ISS, Canadarm/Dextre) |

**BIG BANG THEORY IDEAS**

**Starting point:**

* **Know: — big bang theory — components of the universe over time –3 pieces of evidence for big bang theory — astronomical data and collection methods**
* **Do:--Use knowledge of scientific concepts to draw conclusions that are consistent with evidence**

**--Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled**

**--Formulate physical or mental theoretical models to describe a phenomenon**

* **Understand: The formation of the universe can be explained by the big bang theory.**

**SOME RESOURCES**

* [**https://www.youtube.com/watch?v=17jymDn0W6U&feature=player\_embedded**](https://www.youtube.com/watch?v=17jymDn0W6U&feature=player_embedded)
* **Considering doing this course:** [**https://www.futurelearn.com/courses/gravity**](https://www.futurelearn.com/courses/gravity)
* **A few ideas—**
* **Good videos:** [**https://ed.ted.com/on/Duu3Zj3b**](https://ed.ted.com/on/Duu3Zj3b)
* [**https://www.stem.org.uk/resources/elibrary/resource/26892/big-bang-evidence**](https://www.stem.org.uk/resources/elibrary/resource/26892/big-bang-evidence)
* **Cosmic Calendar:** [**http://www.faradayschools.com/re-topics/science-year-10-11/the-cosmic-calendar/**](http://www.faradayschools.com/re-topics/science-year-10-11/the-cosmic-calendar/)
* **Lesson/Unit Plan Ideas**
* [**http://www.faradayschools.com/teacherspages/science-teachers/**](http://www.faradayschools.com/teacherspages/science-teachers/)
* [**https://www.cfa.harvard.edu/seuforum/download/CQEdGuide.pdf**](https://www.cfa.harvard.edu/seuforum/download/CQEdGuide.pdf)
* [**http://www.lpi.usra.edu/education/pre\_service\_edu/OriginsActivities.shtml**](http://www.lpi.usra.edu/education/pre_service_edu/OriginsActivities.shtml)
* [**https://www.sciencelearn.org.nz/resources/1814-big-bang-theory**](https://www.sciencelearn.org.nz/resources/1814-big-bang-theory)
* [**http://www.nuffieldfoundation.org/science-society/activities-universe**](http://www.nuffieldfoundation.org/science-society/activities-universe)
* [**Http://www.cpalms.org/Public/PreviewResourceLesson/Preview/152376**](http://www.cpalms.org/Public/PreviewResourceLesson/Preview/152376)
* [**http://www.amnh.org/our-research/hayden-planetarium/digital-universe/about**](http://www.amnh.org/our-research/hayden-planetarium/digital-universe/about)