Astronomy 7010 – Dr. McGimsey

Summer 2020

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LAB 2 WEB Based Resources

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https://openstax.org/books/astronomy/pages/2-thinking-ahead

Date accessed: July 11, 2020

Open Stax is an online textbook resource provided to the public free of charge made possible by Rice University. This professional grade web-based resource provides students with access to their entire printed/paperback book as an online e-book in the content area of Astronomy. The link referenced above is related to the "Birth of Astronomy" portion of the e-book. Here, the authors explain ancient Astronomy and students can glean valuable historical perspective. This perspective will be useful as students' study the modern explanations of Astronomy as provided in their textbooks and various other course assignments. Students will benefit from supplementary materials about the foundations of Astronomy. After referring to this resource, students will be able to define features of the celestial sphere, explain how astronomers describe the sky, and understand motions of the Sun, Moon, and planets. Further, this resource provides an opportunity to expose students to a full course in Astronomy as we move toward instruction online in a pandemic society.

This resource is most appropriate for student's grades 9-12. Some of the syntax provided in this resource may prove challenging for younger students. Further, this online textbook does not provide as many graphics and interactive options as other sites so students may not be as visually

excited by the material provided. Student resources, including a getting started guide, brief videos, notetaking, and time management guides, are included in a tab on the main Astronomy page.

This resource is excellent for instructors because it underscores basic principles of Astronomy. The instructor resources tab provides PowerPoint slides, videos guides, video lectures and instructions for taking the course online. It is also aligns with the TEKS and provides and answer guide for assessments once logged in.

https://hubblesite.org/

Date accessed: July 11, 2020

The Hubble site is an excellent resource allowing students to obtain substantive and historical perspective about the Hubble Space Telescope and space shuttles missions. The resource contains an in-depth background page that sets the foundation for the continued scientific study of the Hubble Space Telescope. Further, students can navigate the site to see current news articles relating to several NASA based projects that are similarly related to Hubble. For example, students can compare and contrast their knowledge of Hubble Telescope with the Roman Space Telescope, a similarly related NASA project. This allows students to obtain a holistic view of this area of study.

This site is most appropriate for students studying 6-8th middle level science. The material is challenging enough that it will require a foundation of scientific principles to fully grasp the information presented. 6-8th graders will find the concepts interesting and the site fun to navigate. Students of Astronomy of any age will marvel at the stunning photos sent back to Earth by the Hubble Telescope.

The resource is tremendously useful for instructional purposes. The site contains interesting photographs of deep space, links to view tonight's sky and space missions with scientific relevance. Also, the reading material provided is clear and concise so any teacher could easily craft an instructional segment based on the information available in the resource.

https://www.nasa.gov/topics/moon-to-mars

Date accessed: July 26, 2020

The NASA.gov resource contains thought provoking articles about NASA's recent mission to Mars and humanity's return to the Moon. The articles intertwine the historical significance of space travel with an emphasis on gender equality and the accessibility of space travel to diverse communities. The articles found on this site also highlight the importance of the global connectedness of human exploration in space, specifically preparing to travel to the moon. Further, this resource includes interactive videos and clickable, game like, activities that are geared toward students K-12.

This resource is best suited for high school students grade 9-12. The resource is most suitable for more mature students because the articles introduce the topics of global connectivity and gender equality issues. For students to pick up on these complex themes it might be helpful for them to have had exposure and prior knowledge of other similarly related subject areas.

This resource is very useful for instructors because it will allow educators to demonstrate how science plays a part in many other aspects of life. Sometimes students struggle to recognize the real-world applicability of Science and Mathematics, so it is always nice for instructors to be able to provide tangible examples.

http://www.oercommons.org/courses/phases-of-the-moon-and-tides/view

Date accessed: July 12, 2020

This resource from Open Education Resources (oercommons.org) provides an opportunity for students to complete a worksheet about the "Phases of the Moon and Tides." The worksheet encourages students to analyze scientific data and apply the findings. The students will have the opportunity to work in teams to complete the activity and work together to learn more about the gravitation force of the moon's pull and its effect on the tides of the ocean. In addition to analyzing data, participants will look at various phase animations and record what they see.

This resource is best suited for 6-8th grade students. The material provides an opportunity for students to develop skills in data pattern recognition and provides practice collaborating with others. The skill of collaboration in groups will serve students well as they move forward in their academic career.

This website tool is useful for instruction because it provides an alternative the textbook instruction. An educator may consider updating the datasheets provided because the information is dated. The worksheet and activity could easily be adapted to other astronomical instruction points or reference the main site to find even more related resources for teachers.

https://sciencebob.com/juggling-lunar-gravity/

Date accessed: July 10, 2020

The Science Bob website is a collaboration of education videos and experiments curated and demonstrated by an actual science teacher, author, maker, and presenter Bob Pflugfelder. Most of the experiments presented can be duplicated at home or in the classroom with the instructions provided by the site creator. The link sited above leads to a video presentation of Science Bob conducting a lunar gravity simulation.

This resource is best suited for elementary students in grades 1-5. The information is presented in a visually stimulating format that provides opportunity for hands on experimental duplication and creative learning. Science Bob has his co-authored books for sale and science fair experiments for ideas for student usage.

An educator would find the information provided very valuable and exciting for students. Visual and experimental learning are powerful tools to reinforce the information presented throughout academic study. Several of the videos and experiments are a bit brief so the instructor would need to supplement the video with some additional readings and activities. The videos provide content that would provide a concise introduction to a lesson in the Georgia Standards.

LAB 2: Historical Astronomy, telescopes, planets, moons, comets

Appropriate grade level. Instructional usefulness of site.

https://hubblesite.org/

https://hubblesite.org/resource-gallery/images

Date accessed 7/11/2020

https://www.nasa.gov/topics/moon-to-mars

https://openstax.org/books/astronomy/pages/4-5-phases-and-motions-of-the-moon

Date accessed July 8, 2020

https://weinsteing.wordpress.com/2017/11/28/keplers-laws-1/

Accessed July 12, 2020

Understanding Kepler's second law.

Notice how the speed of the planet increases as it gets closer to the Sun.

Sciencebob.com

Accessed July 12, 2020

https://courses.lumenlearning.com/astronomy/chapter/phases-and-motions-of-the-moon/

Accessed July 15, 2020

http://www.oercommons.org/courses/phases-of-the-moon-and-tides/view

Accessed 7/12/2020