



Beyond the Rainbow: Investigating the Characteristics of Stars

Guide for Curriculum Unit 21.04.08, published September 2021

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At a very early age, children across the globe gaze with wonder at the sighting of a rainbow in the sky. These colors of the rainbow are nature's example of a spectrum of light. In this Earth and Space Science Curriculum Unit, students will deepen their understanding of how astronomers analyze the light of a star to determine the chemical composition, color, temperature, motion, luminosity, distance, and the evolutionary stage of the star. In this high school level curriculum unit, students will see “beyond the rainbow” and enter the world of spectroscopy. Spectroscopy is a sophisticated technique used by astrochemists and astrophysicists to determine the characteristics of stars. The ease with which students can recall not only the colors but more importantly the sequence of these colors in the rainbow enables them to engage in more complicated content material that learn how scientists unlock the mysteries of the cosmos. They will “see the rainbow” throughout this unit as they analyze blackbody curves, categorize stars using the Hertzsprung-Russell diagram, determine the motion of stars using the Doppler Effect, identify the chemical composition of stars from absorption spectra and explore the Sun’s surface features using satellite imagery under different wavelengths of the electromagnetic spectrum.

(Developed for Earth and Space Science, grades 10-11; recommended for Astronomy, grades 9-12, Physics and Chemistry, grades 10-12, and AP Environmental Science, grades 11-12)

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