



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
2022 Volume IV: Alien Earths

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## **Exploration: The Search for the Next Habitable Planet**

Guide for Curriculum Unit 22.04.06, published September 2022

by Karen Y. Cameron

This unit outlines the criteria of what is needed for a planet to be considered habitable. As students learn the requirements for determining the biosignatures of exoplanets they will engage in activities of discovery and inquiry to solidify their understanding. This unit is designed for middle school students but can also be taught to freshmen and sophomore students. The NGSS standards that we'll be using are MS.ESS1.B, MS.ESS1-2 and MS.ESS1-3. Students will learn about life and habitability. This unit will examine the evolution of life on Earth over billions of years through a timeline of unicellular and multicellular organisms and how they survived on Earth. We will consider life being in human form as we now know it. The unit compares Earth and Mars and as well as extra-solar planets (exoplanets), in particular gas giants and water worlds. For the purpose of the identification of habitable planets, we will use the type host star, temperature regulation, thickness of the atmosphere, water sources and the elements nitrogen and oxygen

(Developed for Space Science, grade 7; recommended for General Science, grade 5)

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