



# YALE NATIONAL INITIATIVE

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## Are We Alone?

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by Eric Laurenson

"Are we Alone in the Universe?" This question has been pondered for much of human history, but scientific, technological advances in Astronomy have added a tremendous amount of data to the discussion. Ever since the famous Drake equation was proposed in 1965, scientists have attempted to predict the likelihood of intelligent extraterrestrial life. It is my goal in this unit to explore the current data that exists regarding the requirements for life, the probability that such life could find a suitable existence elsewhere in the Universe and the physics required to detect it.

The debate ranges from those that claim that intelligent life is very rare to those scientists who believe that intelligent life is pervasive throughout the Universe. I will be considering the factors that are postulated to be prerequisites for life, the history of life on our planet that has resulted in our own existence and the relative significance of this fact, the scientific data that allows us to predict the probabilities of life elsewhere in the Universe and the reliability of these claims. I will be considering all of these issues in light of the physics involved in searching for extraterrestrial life. I intend to teach this unit in physics classes to explore probabilities in scientific claims. Using all of this information it is my intention to present a scientific discourse about the relative likelihood that intelligent life exists elsewhere in the Universe.

(Developed for AP Physics, grade 12, and Honors Physics and General Physics, grades 11-12; recommended for AP Physics, grade 12, and Honors Physics and General Physics, grades 11-12)

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