

GE70C Seminar Syllabus, Spring 2004
3 credit hours to fulfill physical sciences GE requirement

An Expedition for Life in the Cosmos

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Class Time: Undecided
Classroom: Geology 3820

Course Description

The concept of extraterrestrial life has consistently entertained public imaginations, which has inspired numerous philosophical arguments and a collection of science fiction literature about extraterrestrials. Recently, scientists have begun to place constraints on the specifics of life in the cosmos. This new scientific discipline regarding life in the cosmos is called astrobiology. Astrobiology is an exciting scientific field that strives to understand life's origin, evolution, and distribution throughout the universe. This course is a seminar on life in the universe, and we will cover all the fundamental concerns for developing life. We will discuss the conditions necessary for life to exist and postulate where we're likely to find these environments in our solar system and beyond. Lab experiments will be used to complement the lecture and discussion material. You will learn about the current studies, results, and future prospects relating to astrobiology.

Grading

Participation	20%
Readings	20%
Student Presentations	30%
Research project	30%

You will be graded on these four criteria, which are intentionally about the same weight. Participation involves not only coming to class, but also interacting during the class discussions. Distracting class activities or a negative attitude towards learning will result in a poor participation grade. I will evaluate your understanding of the reading materials through quizzes and journal assignments. Of course, reading the assigned material will enable you to participate in the class discussions too. The student presentations will be an overview of your research paper during the last week of the quarter. You will also be expected to give short summaries of certain projects throughout the quarter. The writing assignment will consist of two papers; a mock-journal describing an expedition to an extraterrestrial place and a short research paper on your own area of interest. Although much of your expedition journal may be fiction, I expect that the material is consistent with what is physically possible for life. Topic suggestions will be given for both of the writing assignments, but ultimately the choice is up to you.

Textbooks and Other Materials

Life in the Universe, by Bennett, Shostak & Jakosky

Excerpts of other sources such as *Here be Dragons: The Scientific Quest for Extraterrestrial Life*, by Koerner & LeVay; *Rare Earth*, by Ward Brownlee; and *Pale Blue Dot*, by Carl Sagan; will constitute the complimentary reading.

Schedule

Week 1: Introduction to astrobiology
Week 2: Life in our Solar System
Week 3: How common is life?
Week 4: Space exploration
Week 5: Space policy & NASA

Week 6: Field trip to NASA's Jet Propulsion Laboratory

Week 7: Guest Lecture – topic undecided

Week 8: SETI

Week 9: The Future of Life

Week 10: Student Presentations

Tentative Extracurricular Activities

Amateur Astronomy Outing

Rocket laboratory

HAM radio investigation