

Course Description

This course is designed for science and nonscience majors and focuses on life as an emergent phenomenon in the universe. Topics covered will include how scientists define life; competing theories on the origin of life on Earth (including the RNA world, metabolism-first, and panspermia); major events that shaped the evolution of terrestrial life; and “extreme” environments on Earth that have expanded scientific understanding of the limits of life and offer clues to life on other worlds, including deep sea hydrothermal vents, hot springs, acid mine drainages, Chile’s Atacama Desert, and Antarctica’s McMurdo Valley. We will also explore how life has transformed Earth, from the prehistoric cyanobacteria that generated the oxygen in our atmosphere, to the human activity that is rapidly changing our climate today. Possible techniques for searching for life on other planets and moons will be covered, including promising locations for extraterrestrial life within and outside our Solar System. The course will also discuss the possibility of terraforming and/or settling on other worlds, planetary protection, and the risks of applying a colonialist attitude to space exploration. Course material will be interwoven with classical and current scientific literature on astrobiological topics, as well as examples of alien life and space exploration in literature and film. The objective of the course is to give students an introduction to the discipline of astrobiology, including the scientific discourse around defining life and searching for it

CourseViewings will include brief selections from
2001: A Space Odyssey
The Abyss
Alien
Contact
Invader Zim
Star Trek: The Original Series
A Trip to the Moon
The Twilight Zone

Semester Plan: Topics Covered

A Brief History of Astrobiology

-In-class discussion: My Favorite Alien

What Is Life? Information, Self-Perpetuating Engines, and Other Stuff That Will Blow Your Mind

-In-class activity: Develop a definition for life.

The Origin of Life on Earth

-In-class discussion: Argue in favor of one of the prevalent origin of life hypotheses.

How Planets Shape Life, and How Life Transforms Planets

-In-class discussion: Can a planet be considered “alive”?

“Extreme” Environments

-In-class activity: Searching for the limits of life.

Biosignatures and the Search for Life Elsewhere

-In-class discussion: Is life rare, random, or inevitable?

Is There Life on Mars (or Venus, or Europa, or...)?

-In-class discussion: Where in our Solar System are we most likely to find extraterrestrial life?

The Drake Equation and Exoplanets

-In-class discussion: Will we find extraterrestrial life in this century?

Fermi’s Paradox and “Intelligent Life”

-In-class discussion: What is intelligence? What is consciousness?

Space Exploration and Colonization in the Anthropocene

-In-class discussion: Should we

GENERAL STUDIES AGREEMENT FORM

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Acronym	Course Level (1XXX 2XXX 3XXX 4XXX 5XXX 6XXX)		Credits
Schedule Type	<input type="checkbox"/> Lecture (1-5)	<input type="checkbox"/> Seminar (0-6)	<input type="checkbox"/> Tutorial (7) <input checked="" type="checkbox"/> Independent study <input checked="" type="checkbox"/> Internship (9)
Instructor Name	Program	School	
Complete Course Title (80 characters maximum)			
Prerequisite	<input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, list prerequisite by Acronym & Number			
Course Status:	<input type="checkbox"/> New <input type="checkbox"/> Adapted		

NOTE: All Subscript designations and/or W/Q approvals must be submitted through the appropriate Convenor.

Course Description for the Bulletin D must be approximately 45 words

The sections below should be completed by the General Studies Convenor.

Review Outcome:	Yes	No	
	<input type="checkbox"/>	<input type="checkbox"/>	Course meets guidelines for OGÓ category
	<input type="checkbox"/>	<input type="checkbox"/>	Course meets at least two General Studies objectives List Objective Numbers _____

Course As A Whole Is:	<input type="checkbox"/> Approved Unanimously	<input type="checkbox"/> Disapproved With A Split Vote
	<input type="checkbox"/> Approved With A Split Vote	<input type="checkbox"/> Disapproved Unanimously

Subcommittee Members Present:	
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Recommendations:	
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Program Convenor: _____ Date: _____

Dean of General Studies: _____ Date: _____

General Studies Category

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