

ASTR 117: LIFE IN THE UNIVERSE

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2021
Credits:	3
Total Contact Hours:	54
Lecture Hours :	54
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	108
Strongly Recommended:	ENGL 101.
District General Education:	B2. Natural Sciences - Physical Sciences
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter

Catalog Course Description

The origin and evolution of life on Earth, the processes and conditions relevant to life elsewhere in the universe, and the ongoing search for extraterrestrial life. 54 lecture hours.

Course Objectives

- Predict the suitability of given planets for the development of life.
- Understand planetary and interstellar distance scales. Calculate some characteristics of extrasolar planets.
- Gather information relating to astrobiology from a variety of media.
- Appreciate the diversity of life on Earth through an understanding of biological processes.

Major Course Content

1. Astronomy and the Scientific Method
2. The Nature of Science
3. Origin / Timeline of the Universe
4. Light, Spectra, and Radiometric Dating
5. Origin / Review of the Solar System
6. Formation of Earth's Atmosphere and Oceans
7. Life on Earth
8. Cellular Structure and Function
9. Abiogenesis
10. Extremophiles
11. Mass Extinctions
12. Human Evolution
13. Life in the Solar System
14. Human and Robotic Space Exploration
15. Geological Histories of Earth, Mars, and Venus
16. Moons of Jovian Planets
17. Life Among the Stars
18. The Habitable Zone

19. Stellar Life Cycles
20. Extrasolar Planets
21. Intelligent Life and SETI
22. Interstellar Travel

Astronomy and the Scientific Method

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Life on Earth

1. Cellular Structure and Function
2. Abiogenesis
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Life in the Solar System

1. Human and Robotic Space Exploration
2. Geological Histories of Earth, Mars, and Venus
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Life Among the Stars

1. The Habitable Zone
2. Stellar Life Cycles
3. Extrasolar Planets
4. Intelligent Life and SETI
5. Interstellar Travel

Suggested Reading Other Than Required Textbook

Phil Plait's Crash Course Astronomy (<https://www.youtube.com/playlist?list=PL8dPuualJxTPAJr1ysd5yGlyiSFuh0mLL>)

Examples of Required Writing Assignments

Explain why or why not extraterrestrial life would require some type of cellular structure.

List strong arguments against young-earth creationism from i)astronomy ii) geology iii) microbiology iv) paleontology.

What is the Fermi Paradox and what, in your opinion, are some possible solutions?

Which of the 8 bodies in this model planetary system would be most likely to support life, and why?

Examples of Outside Assignments

Research and present (orally and in writing) a topic from Astronomy Picture of the Day. (apod.nasa.gov)

Read one of the following picture books with a young relative, listing questions that were asked, answers given, as well as any discrepancies between the book and class material and how they were addressed.

Attend a planetarium show / lecture outside of class. Comment on which topics from the course were addressed and what, if anything, you would do to improve the presentation.

Participate in a citizen science initiative related to this course via Zooniverse.com.

Instruction Type(s)

Lecture, Online Education Lecture

IGETC Area 5: Physical and Biological Sciences

5A. Physical Science