

ASTRONOMY 110
Searching for ET: Science and Strategies
Fall Quarter 2009

INSTRUCTOR: Dave Meyer
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EMAIL: davemeyer@northwestern.edu
OFFICE HOURS: MWF 12:30 - 1:30 PM
DISCUSSIONS: MWF at 11:00 – 11:50 AM in Tech M128
TEXTBOOKS: *Astrobiology: A Brief Introduction* (Plaxco & Gross)
Rare Earth (Ward & Brownlee)
Where is Everybody? (Webb)

Grading Policy

The course grade will be based on three 3 - 5 page papers (15% each) due October 9, October 30, and November 20, one 6 - 8 page paper (30%) due December 7, and participation in class discussion (25%). There will be no exams, final or otherwise.

Class Discussion

As a freshman seminar, this course is meant to be conducted in a discussion format - in other words, there will be no lengthy lectures by the instructor. In order to make such a course work, it is important that the students complete the weekly reading assignments before the relevant topics are discussed in class each week. In order to encourage class participation, each student will be assigned to lead the discussion on one issue based on the reading during the quarter.

The Papers

One of the most important goals of a freshman seminar is to foster better writing skills. Consequently, the chief evaluative component of this course will be four paper assignments as listed below. Papers will be graded on the basis of clear and concise thinking, originality, and grammatical style. If you need some help in organizing and writing your papers, check out NU's The Writing Place. The instructor will be happy to look over paper drafts well before the due dates. No late papers will be accepted. The particular assignments are as follows:

Assignment #1 (3 - 5 pages)

Due: Friday, October 9, 2009

Based on your education, beliefs, and experiences prior to taking this class, make a case either for or against the existence of intelligent life elsewhere in the Milky Way Galaxy.

Assignment #2 (3 - 5 pages)

Due: Friday, October 30, 2009

In Chapter 5 of "Where is Everybody?", the author discusses 19 solutions to the Fermi Paradox that center around the idea that "They Do Not Exist". Which of these solutions seems most likely to you? Discuss why. Can you think of a better non-existence solution not discussed by the author? Also, which of these solutions seems least likely to you? Discuss why.

Assignment #3 (3 - 5 pages)

Due: Friday, November 20, 2009

Research one of the recently-discovered sub-Neptune-mass extrasolar planets and discuss what type of life, if any, could exist there and/or on a moon of this planet. In what ways, if any, would the Rare Earth hypothesis influence your thinking?

Assignment #4 (6 - 8 pages)

Due: Monday, December 7, 2009

Choose a recent (within the past 6 months) newspaper or magazine article in a reputable (no tabloids!) publication reporting on an ET-relevant topic and critique it. The article you choose should be longer than several paragraphs. In your paper, you will provide some background on the material covered in the article, discuss the importance of any new developments reported, and most importantly, evaluate the accuracy and reliability of the article based on what you have learned in this course. Please include a xerox copy of the article with your paper.

Course Outline

Introductions (Sep. 23, 25)

Read PG (Chap. 1), W (Chap. 1 - 3)

Aliens, UFOs, and Myths (Sep. 28, 30)

Read PG (Chap. 2), W (Chap. 4)

The Fermi Paradox (Oct. 2, 5)

Read PG (Chap. 3), W (Chap. 5, 6)

What is Life? (Oct. 7, 9, 12)

Read PG (Chap. 4 - 5), WB (Intro, Chap. 1 - 4)

Paper #1 Due: Friday, October 9

The Origin and Evolution of Life on Earth (Oct. 14, 16, 19, 21)

Read PG (Chap. 6 - 7), WB (Chap. 5 - 9)

Life on Mars and/or Europa? (Oct. 23, 26, 28, 30)

Read PG (Chap. 8 - 10)

Paper #2 Due: Friday, October 30

The Search for Extrasolar Planets (Nov. 2, 4, 6, 9)

Read WB (Chap. 10, 11)

Extraterrestrial Intelligence (Nov. 11, 13)

Read WB (Chap. 12)

Searching for ET (Nov. 16, 18, 20, 23)

Read WB (Chap. 13)

Paper #3 Due: Friday, November 20

Paper #4 Due: Monday, December 7