

**Course Syllabus**  
**INTD 217 Search for Extraterrestrial Life**  
**Spring 2012**

**Instructor:** Dr. Glenn Piner  
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**Office Hours:** M, W 1:00-3:00 (but drop by anytime)  
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**Class Hours:** Tu, Th 12:00-1:50, Science 116  
**Text:** *Life in the Universe* by Bennett and Shostak  
**Novels:** *The Martian Chronicles* by Ray Bradbury  
*Childhood's End* by Arthur C. Clarke

**Grading:** Six Quizzes (10% each): 60%  
Out-of-Class Assignments: 20%  
In-class Assignments: 10%  
Attendance: 10%

<b>Date</b>	<b>Science Topic</b>	<b>Science Reading</b>	<b>Quiz</b>
1/26	Introduction	"How to Succeed"	
1/31	Astrobiology as a Modern Science	Chapter 1	
2/2	Science and Pseudoscience	Chapter 2 (2.3-2.4)	
2/7	Astronomy and Physics Overview	Chapter 3 (3.1-3.4)	
2/9			
2/14	Earth as a Habitable Planet	Chapter 4	1 (Ch. 1-3)
2/16			
2/21	Biology and Chemistry of Life on Earth	Chapter 5	
2/23			
2/28	Origin and Evolution of Life on Earth	Chapter 6	2 (Ch. 4-5)
3/1			
3/6	Search for Life in the Solar System	Chapter 7	
3/8			
3/13	Life on Mars?	Chapter 8	3 (Ch. 6-7)
3/15			
3/20	Life on the Jovian Moons?	Chapter 9	
3/22			4 (Ch. 8-9)

Date	Science Topic	Science Reading	Quiz
4/3 4/5	Future Habitability of our Solar System	Chapter 10	
4/10 4/12	Life in Other Solar Systems	Chapter 11	5 (Ch. 10-11)
4/17 4/19	Search for Extraterrestrial Intelligence	Chapter 12	
4/24 4/26	Interstellar Travel	Chapter 13	6 (Ch. 12-13)
5/1	Conclusion		
5/7	Optional Final Exam, 3:30-5:30		

### **Overview:**

This is a 4-credit course covering both the science and the societal implications of the search for extraterrestrial life. This course meets the Connections II (Science and Society) component of the Liberal Education Program.

### **Science:**

Approximately 3 credits of this 4-credit course, or 3 hours per week, will be devoted to studying the science of astrobiology. Astrobiology is an interdisciplinary field concerned with the origin, evolution, distribution, and future of life in the universe. This entails both the search for habitable environments in our Solar System, and habitable planets outside our Solar System. Astrobiology seeks to answer the question of whether life exists beyond Earth, and how humans can detect it if it does. Thanks to new methods of detecting planets around other stars, spacecraft explorations of planets in our own Solar System, and an improved understanding of the origin of life, astrobiology is a mainstream field of scientific research and not speculative science fiction. Astrobiology draws from the scientific disciplines of physics, astronomy, chemistry, biology, and geology.

### **Society:**

The idea of life beyond Earth captures the public imagination, so that there are many perspectives on extraterrestrial life that differ from the scientific perspective discussed above. In the Society portion of this class, which will occupy about 1 hour per week, we will investigate ways that groups other than scientists have viewed the question of extraterrestrial life. We will look at the portrayals of extraterrestrials in films and in prose fiction, as well as the religious faith in extraterrestrials of some New Religious Movements. There will be several writing assignments (short papers or essays) based on the Society activities. Because the Society portion of the class is likely to involve some guest speakers that are not yet scheduled, I have not listed dates for the various society topics on the schedule above, but these topics and readings will be announced as we progress through the course.

**Reading:** All Required Reading is to be done **before** the class for which it is listed.

**Attendance:** Attendance is important, particularly since the topics in this course will be new to many of you. Attendance will be taken every class, and will count for 10% of the final grade.

**In-Class Assignments:** You will occasionally complete in-class assignments, usually working in groups. The completed in-class assignments will count for 10% of the final grade.

**Out-of-Class Assignments:** There will be out of class writing assignments based on the society activities, probably consisting of four short essays or papers. Together they will count for 20% of the final grade.

**Quizzes:** There will be quizzes on the science material roughly every two weeks, for a total of six quizzes. Each quiz will count for 10% of the grade, for a total of 60%. These quizzes are given instead of longer midterms, since we cover multiple shorter topics in this course.

**Optional Final:** The cumulative final exam is optional. If you take the final exam, then your score on the final exam will replace your two lowest quiz grades. Therefore, it is only worth taking the final if you think that you can score significantly higher on it than you did on your two lowest quizzes.

**Learning Goals:** This course satisfies the Connections II (Science and Society) requirement of the Liberal Education Program, and has specific learning goals related to this requirement.

- 1) Understand the scientific (astronomical, physical, chemical, biological, and geological) issues relating to the possibility of extraterrestrial life, and be able to clearly articulate these issues in speaking, writing, and simple quantitative problems.
- 2) Understand the current scientific research that is being done on the question of extraterrestrial life, and how this research is likely (or unlikely) to progress in the future.
- 3) Understand that the question of extraterrestrial life reaches beyond the sciences, and be able to discuss how the idea of extraterrestrial life has influenced religions, fiction, and mass psychology.
- 4) Synthesize the knowledge gained from the above three goals to gain a deeper understanding of life on Earth.