

LIFE IN THE UNIVERSE — AST 07

Extra Credit Opportunities

Extra credit is a great way to give your class grade a boost. It is also an opportunity for you to explore astrobiology in ways that are impossible in the classroom.

Each extra credit has an assigned point value that you will receive if you complete the project to my complete satisfaction. Less-excellent projects will be awarded fewer points. All extra credit assignments must be complete—you cannot hand in an incomplete extra credit and hope for partial points.

- Rule #1: All extra credit projects must be handed in to me in class, by the deadline indicated on the *General Schedule of Activities*.
- Rule #2: You can earn up to 15 extra credit points.
- Rule #3: You can only hand in up to three extra credit projects per week. Do not procrastinate!
- Rule #4: Limitations apply to each type of project. For example, you can do only three movie reviews.
- Rule #5: I grade all answers on factual correctness, but also on grammar, logic, and presentation.

Extra Credit #1: Literature report—5 points each, 15 points max/semester

Read an online news article (less than 3 months old) with significant astrobiological content. The article should be at least 500 words long. Answer the following questions clearly. Each answer should be 30-50 words, although I am not a stickler on this point.

- 1) Summarize the main astrobiological points of this article.
- 2) What is a new question, research direction, or experiment that results from this finding.
- 3) Include a hardcopy of the original article with your assignment.

Good sources for astrobiological news articles are:

<http://astrobiology.nasa.gov/>
<http://www.astrobiology.com/>
<http://www.astrobio.net/>
<http://journals.cambridge.org/>

Extra Credit #2: Book review—5 points each, 15 points max/semester

Read one of the following classic science fiction works with relevance for our class. Write a one page review focusing on the connections with class. Other works can be suggested for consideration

2001: A space odyssey (1968; A.C. Clarke). Discuss aspects of first contact

Contact (1985; C. Sagan). Discuss aspects of first contact.

Childhood's End (1953; A.C. Clarke). Discuss in the context of the "Transcendence Hypothesis"

Extra Credit #3: Creative art project—5-15 points each, 1 project/semester

Astrobiology raises many issues with profound personal and cultural implications. Students can submit to me a proposal (50-100 words) of an art project to be completed during the semester. Your proposal should outline the media that will be used, and how the concept relates to astrobiology. Art projects must be approved prior to execution. A project should take approximately 5-10 hours to complete. Expect to present your piece to the class (5-10 minutes). Your grade will consist of 10 points for the effectiveness of the piece, and 5 points on your written presentation.

Extra Credit #4: Astrobiology in cinema (Movie review!)—5 points each, 15 points max/semester

Pop some popcorn, gather your friends! Select a movie from the list below, then answer two questions about it. Your answers should be at least 30-50 words each. I have given each movie a two-letter code—you can only answer a question if the two letter movie code is allowed in the movie code list given at the beginning of the question. I also indicate the year the movie was released; make sure you watch the correct version! Warning: some of these movies may have gore (human or alien); choose wisely if you are easily disturbed. The goriest in the list are indicated, but research the movie before watching it. Contact me with new movie suggestions...

- 1) [All but #co] Terrestrial life forms occur with an enormous variety of body plans; for example organisms on Earth may have 0, 1, 2, 4, 5, 6, 7, 8, 9, 12, ~20, ~100 legs, etc. Given this observation, defend or criticize how convincingly this movie presents its extraterrestrial organism, or do they simply have the equivalent of an actor in a rubber/cgi suit?
- 2) [All but #cl, di, er, s8, tr] Given the enormous resources needed for interplanetary or interstellar travel, defend or criticize this movie's approach in explaining the cost/benefit of the extraterrestrials reaching the Earth.
- 3) [All] Identify and comment on two significant points in the movie that seem particularly scientifically plausible.
- 4) [All] Identify and comment on two significant points in the movie that seem particularly scientifically weak or even impossible.

Movie list:

Arrival (2016)	ET: The Extra-Terrestrial (et; 1982)
Avatar (av; 2009)	Independence Day ^g (id; 1996)
Close Encounters of the Third Kind (ce; 1977)	Signs (si; 2002)
Cloverfield ^g (cl; 2008)	Super 8 (s8; 2011)
Contact (co; 1997)	The Thing From Another World (th; 1951)
The Day the Earth Stood Still (d1; 1951)	Tremors ^g (tr; 1990)
The Day the Earth Stood Still (d2; 2008)	War of the Worlds ^g (ww; 2005)
District 9 ^g (di; 2009)	
Europa Report (er; 2013)	

Note: Movies with the superscript “g,” such as Cloverfield, are ones with a high gore content.