

## HONR 218D: Life, the Universe, and Everything

### Instructor:

Professor: Cole Miller, PSC 1114, (301) 405-1037, miller at astro.umd.edu

Office hours: by appointment only.

I will post written lecture notes before each class, and assume you have read them before the actual lecture.

### Schedule:

Lectures on Mondays from 2:00 to 4:30, CSS 0201.

### Textbooks:

None required. Readings will be assigned as appropriate, from my website at

<http://www.astro.umd.edu/~miller/teaching/honr>

### Academic Integrity

Feel free to discuss your work with other students, but you must work out and write up the answers yourself. I am looking for your unique words and not those of a fellow student, books, the Web, or any other source. If, in a rare case, you feel that a short quote is essential to your answer, put it in quote marks and cite your source. For example, "As Carl Sagan said: 'billions and billions' (source: Cosmos)". Copying of words in bulk without attribution (even with small wording changes) or copying of another student's work risks being sent up for a possible violation of academic integrity. See <http://shc.umd.edu/SHC/Default.aspx> and its links if you have any questions about academic integrity. Copying of large parts of a source *with* attribution is not a violation of academic integrity but it will result in a lower grade on the assignment; I want to know your thoughts, not those of some other source! Your best bet in all this is to do whatever research you need, but to write up your answers without looking at any sources. Then, you can go back to see if you accidentally copied more than you realized.

### Students with Disabilities

Students wishing to request academic accommodations for a disability should notify the professor at the beginning of the semester. The student should also register with Disability Support Services (DSS) <http://www.counseling.umd.edu/DSS/> (301-314-7682).

### Attendance Policies

University policy excuses the absences of students for illness (self or dependent), religious observances, participation in University activities at the request of University authorities, and compelling circumstances beyond the student's control. Students must submit the request in writing and supply appropriate documentation, e.g., medical documentation. Except in the cases mentioned above, students are expected to attend all sessions since class participation will be graded. For more information, see the University's Attendance and Assessment Policy. Students will not be penalized in any way for participation in religious observances and they will be allowed to make up academic assignments that are missed due to such absences. However, it is the student's responsibility to inform the

instructor of any intended absences for religious observances in advance of the projected absence within two weeks of the start of the semester and with a written notification. The request should not include travel time.

### **Inclement Weather**

Assignments will be rescheduled if necessary due to inclement weather and campus emergencies. Official closures and delays are announced on the campus website and snow phone line (301-405-SNOW) as well as local radio and TV stations.

### **Course Grading**

|                     |     |
|---------------------|-----|
| Class participation | 15% |
| Reading responses   | 25% |
| Midterm Exam        | 15% |
| Term project        | 20% |
| Final Exam          | 25% |

### **Course Work**

#### *Class participation*

Considerable class time will be devoted to discussion. You may use your Reading Response as the launching point for your contribution to the discussion. We will also pose specific questions to debate, and discuss some issues in small groups prior to wider class discussion. For the terribly shy: don't worry, this is not onerous. With 20 people in the class, the challenge is to get a word in edge-wise. For the loquacious: good — please express yourself. But also be respectful of your fellow students and don't overly monopolize the conversation. The debate topics will be listed on the webpage prior to class. Therefore, full participation means that you will look up these topics and be prepared in advance, rather than simply relying on what is discussed in that class.

As part of your class participation, you are required to send me, by e-mail, at least one question for discussion on the topic of a class by no later than the night before the class. This will allow us to have flexible and targeted sessions.

#### *Weekly reading responses*

At the beginning of each class, I will ask for a one single-spaced page typed response (which can be printed out from a computer) to assigned reading or viewing. I will ask you that you give me a hardcopy, so that I can comment on it and return it to you, and also an electronic version in PDF format (you can prepare your document in Word or anything else, but please convert it to PDF before sending it to me), so that I have a record of your responses. A good essay will include a concise description of the topic covered, and your reaction to it. Your reaction should be critical (though not necessarily negative) and may be emotional (do you find the idea compelling? stupid?), but must be well argued and **must include your thoughts instead of just being a summary of the reading**. I will also require that as part of your one page response you have a paragraph in which you indicate a webpage not listed on the reading that is on the topic, and your response to it. You are free, for example, to pick a crackpot site and refute it.

I will give you wide leeway in your essays. I will only take points off if (1) you do not give me *your* thoughts in addition to a description of the reading, (2) you do not give me

your thoughts on an extra webpage, (3) you make clearly factually incorrect statements in your essay, or (4) you have typos or grammatical errors in your essay. Each reading response will be worth 2 points, and 0.5 points will be taken off for each 5 typos or grammatical errors (i.e., if you make 4 errors then no points will be deducted; 5 errors means 0.5 points; 9 errors means 0.5 points; 10 errors means 1.0 points; and so on).

### *Term project*

This will be a team project, with individual presentations. Get together with three other people who are interested in the same general topic that you are. Each of the four of you will write your own 10 page (double spaced, 12 pt) discussion of some aspect of the topic, plus figures if you choose; the four essays must address different aspects of the topic. **Again, your essay must include your thoughts, not just be a summary of your readings.** The rules above about factually incorrect statements and typos or grammatical errors apply for your essay as well. This will count for half of your project grade (10% of the total 20%). The second half of your participation grade will be based on your presentations of your projects in the last class, May 11. The four of you will give 5 minute presentations each about your topic.

NOTE: do not go over time! We will have enough time if everyone sticks to five minutes, but for more than that I will take off points, with more points for more time. In particular, every 30 seconds over is a 0.5 point deduction; every one minute under is a 0.5 point deduction (thus a 5 minute 29 second presentation will have no points taken off for time, but a 5 minute 30 second presentation will have 0.5 points off and an 8 minute presentation would have 3 points off!). The time for an individual will be the *total* time they spend; it is, for example, fine if members of a group interleave their presentations. Of the 10% that is based on your presentations, 8% will be based on your individual presentation and 2% will be based on the coordination of your four presentations. Be creative! If you are artistic, you could imagine producing a comic strip related to the topic; or you could sing a humorous song about the topic with your three partners acting as the chorus; or you could give a sermon with your partners calling out the hallelujahs; or you could have active and coordinated demonstrations; or whatever. The topics can be anything in the class. I will require that you and your four partners hand in a proposal for your topic and division of labor at the beginning of the class after spring break, so that I can evaluate appropriateness and try to avoid conflicts between groups.

### *Midterm and Final Exams*

Exams will include essays, fact based knowledge, and challenges of critical reasoning.

### **Allowed sources**

There is no limitation on sources. You should use as many as you need. The readings have many good references and are fine places to start. By the same token, in no case will the readings suffice as the sole sources. Indeed, you should not rely exclusively on any one source. Try to avoid predominantly relying on a single source if at all possible. (The extent to which this is possible will depend on the nature of your topic.) Books, the internet, video (e.g., Nova programs), Uncle Joe... any potential source is fair game. You must learn to use your judgment about what constitutes a reliable source: don't believe

everything you read or hear from Uncle Joe, or from random webpages. Obviously, you must not cut and paste from any sources.

### **Letter Grades**

I will guarantee that you will receive no worse than the following letter grades for a given percentage of the total available points (note: there will be no extra credit):

|          |          |
|----------|----------|
| 90%–100% | A– to A+ |
| 80%–90%  | B– to B+ |
| 70%–80%  | C– to C+ |
| 60%–70%  | D– to D+ |

I may grade on a curve if the average is significantly lower than suggested by the table. Note that not all of you will get A grades, and unless you can demonstrate that I have added up your number grade improperly (as opposed to some argument that you should have received more credit on an assignment), I will not accept any complaints about your final letter grade. Students who are mainly interested in an A should not attend this class. On the other hand, students who are mainly interested in learning are more than welcome.

### **Laptop Policy**

In principle, laptops can allow you to take notes faster and access the class website. In practice, they are more likely to be used for non-class purposes :). Therefore, what I will require is that if you use a laptop (1) you sit in the far back row, so that there are no students behind you to be distracted, and (2) you turn the sound off and do not use headphones. This will minimize the potentially negative impact. If despite these approaches the use of laptops turns out to be too distracting for the class as a whole, I may need to ban them entirely, but let's hope that doesn't happen. Similarly, please turn off your cellphones in class.

### **Tentative Course Outline**

Jan 26: Overview and the scale of the universe; cosmological origins  
Feb 2: Planet formation. First debate.  
Feb 9: Biological evolution  
Feb 16: Biological evolution, continued  
Feb 23: The origin of life; the limits of life. Second debate.  
Mar 2: Mass extinctions  
Mar 9: Midterm  
Mar 16: Spring break  
Mar 23: Possible requirements for life. Third debate.  
Mar 30: Mars.  
Apr 6: Other places in the Solar System. Extrasolar planets  
Apr 13: Future of life on Earth. Fourth debate.  
Apr 20: Drake equation, development of intelligence, alien visitation  
Apr 27: Interstellar travel, the Fermi paradox. Fifth debate.  
May 4: Relativity, time travel, and terraforming  
May 11: Presentation of term projects  
Final exam: Monday, May 18, 1:30-3:30 PM