

ASTRONOMY 202

Life in the Universe

TuTh 12:30-1:45pm; Steward Observatory N210
<http://merope.as.arizona.edu/~agaspar/ASTR202/>

Dr. Christopher Walker

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Prerequisites: NatSci 101, 102, or 104

1. Course Goal

The main goal for the students in this course is to have fun learning about life in the Universe and, in the process, gain an appreciation for the methods used in science. We hope that your exposure in this course to different areas of science will make you feel more comfortable encountering these areas in the future, continue your interest in them and facilitate your understanding of them.

2. Course Work and Grading Policies

No Late Work is Accepted!

Grading will be based on a percentage of final points as follows:

| | |
|----|----------|
| A: | 90-100% |
| B: | 80-89.9% |
| C: | 70-79.9% |
| D: | 60-69.9% |

The percentage breakdown at this point will be simply as follows:

| | |
|----------------------------|---------------------|
| 2 midterms | 40% |
| 1 final exam | 25% |
| in-class readiness quizzes | 5% |
| 1 creative project | 10% |
| 4 takehome lab exercises | 20% |
| extra credit | 0.5% each, up to 3% |

3. Required Exams

There are **three midterms and a final**. Every student **must** take each exam. The top two out of three midterms will be counted toward your final grade. Your top two midterms are worth 20% each of your final grade. The final exam is worth 25%.

Dates:

Midterm 1: Thursday, September 16, 2010, 12:30-1:45pm

Midterm 2: Thursday, October 14, 2010, 12:30-1:45pm

Midterm 3: Thursday, November 18, 2010, 12:30-1:45pm

Final Exam: Thursday, December 16, 2010, 11:00am-1:00pm

3.1 Creative Project

An important component of the class is the **creative project**. The creative project will be chosen by the student, with prior approval by the instructor. We suggest this project relate to your foremost area of academic interest, as well as the course theme. For instance, if you are an education major, you may want to develop a lesson plan for grade school and implement it. Most students choose to write term papers. **Abstracts** stating the nature of your project are due in the lecture class **on or before October 28, 2010**. Failure to submit an abstract will result in a grade reduction. **The final project is due November 23, 2010.**

3.2 Lab Exercises

There are 4 take-home **lab exercises**. Every student is expected to do each lab exercise. Each lab exercise will be worth 5% of your final grade. **If you work with one or more students in doing the labs, their names must appear under the heading 'Collaborators' at the top of your lab. Each student must turn in a complete lab written in their own words, not just a copy of a group effort.** The midterms and final will have questions on them pertaining to the lab exercises, so you should be sure to understand what you turn-in. These labs will be assigned in class and a *hardcopy* turned-in on the date specified in class.

NO LATE WORK WILL BE ACCEPTED.

3.3 Readiness Quizzes

A short **readiness quiz** will be given at the beginning of most classes. The quiz will contain 1 or 2 questions covering the material presented in the previous lecture. The top 20 quizzes will be counted toward 5% of your final grade.

3.4 Extra Credit

For extra credit students may attend the Steward Observatory Public Evening Lecture Series. These lectures are held at 7:30pm on the date specified and last about an hour. They are located in your classroom, N210, in Steward Observatory. Each extra credit event comprises up to 0.5% added on to your final grade for a total of up to 3% added on to your final grade. To get credit for an extra credit event, you will be required to hand in a **one page typed write-up** summarizing the lecture. The write-up will be due in class within one week of the lecture. Additionally, in order

to provide proof of attendance, the host (not the speaker) of these lectures must stamp or sign your lecture notes after the talk. These notes with the stamp or signature must be handed in with your summary of the lecture.

Following the talks, there are opportunities for viewing the night sky (weather permitting) with the use of the 21-inch telescope. All lectures and the use of the telescope afterward are free of charge. Dates for the lectures are online at: http://enterprise.as.arizona.edu/~taf/pubeve/pub_lect.html. A link to it can also be found on the class website.

List of scheduled talks:

Sept. 13:

Speaker: TBA

Topic: TBA

Sept. 27:

Speaker: Dr. Andrew Marble

Topic: Cosmic Mirages: The Widest Separation Gravitationally Lensed Quasars

Oct. 11:

Speaker: Dr. Marcia Rieke

Topic: New Worlds, New Horizons in Astronomy and Astrophysics: How Astronomers Pick the Next Big Thing

Oct. 25:

Speaker: Dr. Timothy Swindle

Topic: How Old is Old? Finding the Ages of Rocks and Planets

Nov. 8:

Speaker: Dr. Josh Eisner

Topic: TBA

Nov. 15:

Speaker: Dr. Hannah Jang-Condell

Topic: TBA

Dec. 6:

Speaker: Dr. Casy Meakin

Topic: Supercomputing Stars

If you cannot attend these lectures, but would still like to receive extra credit, you may want to consider attending lectures from the LPL evening lecture series, which are posted on their website at <http://www.lpl.arizona.edu/calendar/lecture.php> as they are planned. You may also summarize scientific articles related to a topic in our class from scientific magazines such as *Science*, *National Geographic*, and *Nature* just to name a few. Please make sure to explain how the article is related to our class and attach a copy of the article to the summary you hand in. No more than two extra credits may be handed in during one class and no more than a total of six for the entire semester.

4. Course Materials

Things you may want to have in order to make the course easier (although not required):

1. A calculator with scientific notation
2. A ruler or strait-edge
3. An inquiring mind

5. Absence Policies

Attending lecture is an integral part of this course. If you cannot routinely attend lecture, your performance in the course will suffer. Absences for holidays or special events observed by organized religions will be excused for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will also be excused. If you miss a Readiness Quiz for one of these two reasons it will not be counted against you. Please let us know in advance with an e-mail that you will be missing class. Should you have a conflict with any of the midterms for one of these reasons, please see us immediately.

6. Academic Integrity

In science, we depend on good faith efforts to report as fully and accurately as possible observations, measurements, and experiments. Presentation of any work other than your own is considered academic dishonesty. This includes copying assignments from others and any other form of cheating or plagiarism. Note in particular that if you substitute a prediction, however derived, for an actual observation or measurement, you are guilty of scientific fraud. We expect that all of the work you present for evaluation is in fact your own and that you will not give or receive unauthorized assistance in any academic exercise. Be careful of collaborations in which each participant does not contribute the full quota of independent work. If any penalty has to be assessed for a breach of integrity, the University requires official reports to be made to protect the rights of everyone involved. Expect University policy to be followed strictly in all matters of academic integrity.

In short, as a rule of thumb, ask yourself if you would want your instructor there when you collaborate. If not, you're probably cheating. Penalties for cheating range from zero credit on the assignment to failure of the course.

7. Students with Disabilities

Students with disabilities who require reasonable accommodation should provide us with the proper documentation from the Disability Resource Center. All information will remain confidential and be used only to help in accommodating the student.

8. Approximate Course Outline and Calendar

Week 1: From Big Bang to Atoms

Week 2: From Molecules to Stars

Week 3: Planet Formation; Earth's Origins

Week 4: The Primordial Soup

Week 5: Extrasolar Planets

Week 6: Life in the Solar System

Week 7: Darwinian Evolution

Week 8: Origin of Intelligence

Week 9: Human Evolution

Week 10: Lifetime of a Civilization

Week 11: How many others are out there?

Week 12: How will we communicate with them?

Week 13: Interstellar Conquest

Week 14: First Contact

Week 15: Review

Week 16: **Final Exam**

Lectures are subject to change depending on the pace of the class.