

From Stonehenge to Hubble

ASTRON 0088, Spring 2018

Instructor: Dr. David Nero
Office: 221B Allen Hall
Office Hours: MWF 1:30–2:30pm
Other times by appointment.
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Meeting Times: MWF 11:00–11:50am in 343 Alumni Hall
Class Website: CourseWeb (courseweb.pitt.edu)

Textbook: None required.
Optional supplement: *Coming of Age in the Milky Way*, by Timothy Ferris
Optional supplement: *OpenStax Astronomy* (free in pdf form)

Course Description

ASTRON 0088 provides a historical perspective of our place in the universe. After a brief introduction on the nature of science, we start with a description of the nighttime sky, both as viewed by the ancients, and in terms of a contemporary practical understanding. Next, we will follow the evolution of the beliefs in earth's place in the cosmos, beginning with the ancient Greeks, up through the Renaissance and the birth of modern astronomy. The remainder of the course applies a historical context to the major discoveries of modern astronomy: the search for life on other planets, the life and death of the Sun and other stars, and the discovery that our universe began 14 billion years ago and has been expanding ever since.

Course Learning Objectives

- Describe the major historical figures and their contributions to the development of astronomy.
- Summarize the scientific principles used to study the universe.
- Identify objects in the universe, understanding them in terms of their sizes, ages, and distances.
- Evaluate the ways in which the evolution of the universe has influenced the development of life on earth.

Classroom Requirements

1. **Cell phones and all other electronic devices must be silenced.** In addition, students are expected to refrain from excessive electronic communication during class. Laptops, tablets, and smart phones may be used for note taking or reference purposes. Watching videos, playing games, and/or browsing the Internet is not appropriate during lecture.
2. **Be courteous to your neighbors.** Carrying on a conversation, habitually coming in late or leaving early, or misusing technology (as detailed above), are all disruptive to the class. Students who fail to show common courtesy will be asked to leave.

Policies

Attendance Policy: Attendance will be recorded, but not graded. Be aware that low attendance has been shown to be strongly correlated with a low grade in this course.

Missed Assignments/Exams: By default, missed assignments (including exams) earn a zero grade. If you are aware of an impending conflict with the scheduled time of an exam or other assignment, you should let me know as early in the semester as possible. In these cases, accommodations will be provided as long as the circumstances are reasonable and you can provide appropriate documentation. Excepting cases of documented emergency, the Final Exam must be taken at the time scheduled by the Registrar.

In cases where prior arrangements have not been made, missed exams can only be made up in cases of **documented emergency**, and only if you contact me within **48 hours** of the missed exam.

Academic Integrity: All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty will be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be subject to the process outlined in the University Guidelines on Academic Integrity (<http://www.as.pitt.edu/fac/policies/academic-integrity>).

Disability Services: If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and Disability Resources and Services no later than the second week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call (412) 648-7890 (Voice or TTD) to schedule an appointment. The Disability Resources and Services office is located in 140 William Pitt Union on the Oakland campus.

Statement on Classroom Recording: To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Grade Scale

If you achieve the following final grade percentages in the course, you will receive at least:

Percentage	Minimum Grade
90%	A-
80%	B-
70%	C-
60%	D-

Depending on the relative difficulty of the exams, I may curve up to compensate (but never down).

Grading

	%	Points
13 Homework (lowest dropped)	14.4%	72 (6 ea.)
13 Recitation Activities (lowest dropped)	19.2%	96 (8 ea.)
Visit to Observatory	6.4%	32
Midterm Exam	20%	100
Final Exam	40%	200
Total:	100%	500

In addition to the above, there will also be extra credit opportunities (described in the next section).

Clicker Questions (ungraded)

Several times during each class, I will show a multiple-choice question that will be answered by pressing a key on a hand-held radio transmitter or “clicker.” You are encouraged to discuss your answer with your neighbor while answering. These are not graded. That said, your participation will be used as a record of your attendance.

Clickers: The lecture hall is equipped with set of clickers for student use. At the beginning of each class, you are to pick up your assigned clicker from the bins at the front of the room. Likewise, you are to return your clicker to the bins at the end of class, since other students in other classes will use the same clicker. Under no circumstances are you to remove the clicker from the classroom or to take a clicker other than the one assigned to you. If your clicker is missing, then you need to let me know before you leave. Clickers will be checked after each class, and students will be held responsible if their assigned clicker has gone missing.

Homework

Homework assignments will be posted on CourseWeb. Each of these assignments will build on the material covered in lecture by having you complete a short activity at home. Homework is collected at recitation.

Recitation Activities

Each recitation will involve a group activity. Students will work in teams to answer questions requiring thought and understanding rather than memorization. Each group fills out and returns one copy of the activity.

Observatory Visit

The University of Pittsburgh’s own Allegheny Observatory has a rich history and conducts ongoing research today. As part of this course, you will visit the observatory once this semester. You will schedule your trip at recitation. Buses depart from Allen Hall in the evening and return to campus about three hours later. Detailed information about the available dates and bus schedule will be distributed at recitation later in the term.

Exams

There will be one midterm exam and a final exam. The midterm will cover the first 40% of the course, and the final will cover the entire course. Exams will be a mix of multiple choice (40% of the points) and essay questions (60% of the points). Potential essay questions will be posted ahead of time on CourseWeb. The essay questions on the exams will be selected from this list. All exams are closed book/notes.

Exam Corrections: For the midterm exam (but not the final exam), students will have the opportunity to submit new answers for missed multiple choice questions. When doing so, you must explain why your new answer is correct. Each corrected question will earn back half of the missed points.

Extra Credit Opportunities

Student Feedback (+5 points)

Student feedback is important to me, so I would like to meet with small groups of students for this purpose. A feedback group will consist of six students, and will meet with me for 30 minutes at one of the times posted on CourseWeb in exchange for extra credit. If you wish to apply for one of these groups, sign up on CourseWeb. Groups will be filled on a first come, first served basis, so sign up soon (these fill up very quickly!).

Astronomy News Write-Ups (+2 points each, available once per recitation)

Astronomy is an active field, with new discoveries occurring almost daily. Each week that recitation meets, you will have the opportunity to earn up to 2 points of extra credit by submitting a one page write-up about a recent astronomical news story of your choice. Formatting details are on CourseWeb.

Helpful Resources

- If you encounter difficulty in this course, the best thing to do is to visit me and/or your TA at office hours as early in the semester as possible (see CourseWeb for an up-to-date list of office hours). Sadly, we won't be able to help much if you wait until the end of the semester before seeking help.
- The department of Physics and Astronomy maintains the free *Physics Resource Room* in Thaw Hall 312. It is staffed with physics and astronomy graduate students. Typical hours are 9am–4pm, weekdays. No appointment is needed.