

Astronomy

Syllabus

Instructor: Ron Robinson

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Office Hours: C123 M-F 7-7:30am, or by appointment

Textbook: Investigating Astronomy by Teon Edwards & Jeffery Lockwood, TERC 2010

Overview:

As eloquently argued by Isaac Asimov in “Beyond the Night Sky,” there is so much beauty in the universe for the eye and mind to behold. We derive visual pleasure from gazing at a majestic planet or a glowing nebula in the night sky and intellectual gratification from understanding a cosmic mystery through a process called science.

What distinguishes us from lower creatures if not our sense of wonder and curiosity, our compulsion to explore and discover? And what exemplifies this compulsion better than our quest for the knowledge of the universe and our place in it? Astronomy is ultimately the study of who we are and where we came from. Astronomy is the only science that truly acts as a mirror. To paraphrase our textbook authors,

“Astronomy is important, not just because it is about stars and galaxies, but because it is also about us. It tells us what we are, and once you know astronomy, you see yourself and your world in a different way. Astronomy changes you.”

Astronomy includes physics, chemistry, geology, meteorology, and even biology. It is an ideal subject to learn about humanity’s scientific endeavor. As such, the study of astronomy cultivates important scientific and mathematical skills required by a society with advanced technology. Understanding how we know what we know will enable us to discriminate among competing hypotheses and judge the reasonableness of ideas that are proposed. To know the workings of science is one of the most important tools we have for meeting the challenges of our technological society with all its benefits and problems.

Course Objectives:

The objectives of this course are:

- to focus on human beings as part of a large-scale physical existence;
- to identify our position and relative scale-size in the Universe;
- to familiarize students with the astronomical objects studied by astronomers;
- to familiarize students with the physical concepts and terms used in modern astronomy to gain an understanding of the physical nature of various bodies and phenomena; and,
- to expose students to the practices, methodology, and the conceptual basis of a modern physical science, such as astronomy.

Learning Requirements:

This is a course aimed at a basic mathematical understanding of astronomy. You will be expected to be able to apply simple math to concepts about our Universe. While studying, it may be helpful to ask if you can picture the concept being presented such that if it was changed in straightforward ways, you would know what would result. For instance, do you understand the concept of eclipses enough to understand what would happen if the Moon was twice as large, or twice as far away? Do you understand enough about stars to work out what would happen if the Sun was twice as hot?

At the same time, I expect *very high standards in this course*. You should know from the outset that my intention is to make the course relatively difficult, giving students that work hard to understand the material the opportunity to excel. If *you* have high standards for yourself in this course, *you* will have the opportunity to excel.

I am passionate about astronomy, and I hope you will be too. There is a lot of really amazing stuff out there, from planets orbiting other stars, to black holes that weigh more than a million Suns, and that we can directly observe. In my experience, this stuff is mind-blowing enough that some people you meet will just be interested to hear that you know some astronomy.

Grades:

Your grade will be based on your labs, tests and final exam. The grade brake down is below:

Name:	Points:	Total Points:	1000-900	A	940-900 A-
Labs/Films	10	420	899-800	B	870 B+ 830 B-
Tests	70	490	799-700	C	770 C+ 730 C-
Exam	90	90	699-600	D	670 D+ 630 D-
Total:		1000	599 - Below	E	

Expectations:

This class will be a combination of classroom activities, lab work, videos, computer activities, homework, and lectures / discussions. I expect each student to maintain a class notebook. Instructions for maintaining the notebook will provided in class. Each notebook will be reviewed and graded at announced times throughout the marking period (usually on test or quiz days). The student should have a notebook that they can turn in for grading.

No food or drink will be allowed in class. These science rooms have chemicals being used in them, dissections being performed, and rocks and dirt spread around. This is not an environment for food or drink. Please plan accordingly.

Behavior: I expect students to treat me, their classmates, and the classroom with respect. For the safety of each student, no horseplay will be tolerated during class. Detrimental behavior will result in immediate removal from the classroom. If asked to leave, the student will report to the appropriate class administrator and explain the situation. A behavior referral will follow. Additionally, students are expected to keep the classroom clean. You will not be able to leave the classroom until your area is clean. Restitution will be required, and a referral will be made if a student is found defacing, damaging, or destroying school property.

Homework: Complete all assignments by the due date. Assignments are due the next day from when it was assigned. Assignments will be “due” when I request them at the beginning of the class period. Any work turned in after I have requested it from the class will not be graded. Please make sure that all assignments are written legibly; if I can’t read it, you can’t get credit for it!

If you will be in school, but will miss my class due to a planned event (i.e. a field trip, a student council meeting, an athletic event, a music event, a doctor/dentist/orthodontist appointment, etc.), you will be expected to turn in your class assignment on the day it is due. You may turn the assignment in early, or ask the General Office secretaries to please put your homework in my mailbox. Plan ahead accordingly! NOTE: Please be careful about giving your work to another student to turn in for you. If that student fails to turn in the work, you will be penalized.

Plagiarizing or Cheating: Plagiarizing and cheating will not be tolerated. Please do your own work! Plagiarism is presenting someone else’s work or ideas as your own. The work or idea does not have to be an exact copy to qualify as plagiarism. If you use a source for a classroom assignment, give credit to your source. When activities are done as a pair or group, each students report will have the same data in them, but each student should not have the same exact discussions or conclusions; students are expected to write out answers in their own words. It is very important for each student to understand the difference between “How do you do this?” and “What is the answer?”

Cheating (or the intent or appearance of) on any homework, class work, or assessments (exams, tests, or quizzes) will be treated according to the Public School Discipline Policy. This includes “sharing work” or “working together” when not specifically permitted by the teacher. It is considered cheating if you look on another student’s exam/test/quiz, have unauthorized materials with you during the exam/test/quiz, or obtain information about the exam/test/quiz in advance. Talking while any exam/test/quiz is being taken will result in a zero for the offending student(s).

All parties involved in cheating or plagiarizing will be disciplined.

Extra Help: Please see me if you are having any problems with your classwork. I can't help you if I don't know that you are having a problem. I am available before school, during my preparation hour, and after school to provide you with assistance. However, please make an appointment with me so we can arrange for a time to get together that is good for both of us – I want to avoid conflict with any after school meetings or appointments I may have. I can also be available during lunch time by appointment.

Communication: Communication between student and teacher as well as parent/guardian and teacher is always an important part of any school year.

Please feel free to contact me concerning your student. It is very easy for me to reply to emails, so I encourage you to communicate with me in this manner. Feel free to email me as often as you would like. Many parents have decided this is an excellent way to keep up with their student's progress during the semester/year.