

Astronomy 161 – Introduction to Solar System Astronomy

Syllabus for Winter Quarter 2010

MTWRF, 9:30-10:18am, 1184 Postle Hall

Prof. Paul Martini

Course Objectives

Astronomy 161 fulfills the physical science requirement of the Natural Science Category of the General Education Curriculum. Natural Science coursework fosters students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world. The expected learning outcomes of this category are:

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

In Astronomy 161 we will meet these goals and objectives through the study of astronomy, with an emphasis on the solar system. The course will begin with a study of how simple observations and measurements can be used to understand the world around us, such as the origin of the seasons and the phases of the moon. Along the way we will introduce basic physics concepts to understand astronomical observations as well as use these observations to understand physics and scientific theories. The second half of the course will concentrate on modern solar system astronomy. Here the emphasis will be on what we know about the constituents of the solar system, most notably the planets, and how these discoveries were made. We will conclude the course with a study of planets around other stars and the prospects for life on other planets.

Office Hours

Prof. Paul Martini

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Recommended Textbook

21st Century Astronomy (2nd Edition), by Hester, Blumenthal, Smith, Burstein, Greeley, and Voss. This textbook is recommended for both Astronomy 161 and 162. There is also a shorter (and slightly less expensive) volume entitled *21st Century Astronomy: The Solar System* (also 2nd Edition) by the same authors that contains only the material for Astronomy 161. If you plan to take both Astronomy 161 and 162, you may find it more economical to purchase the larger volume.

Course Web Page

<http://www.astronomy.ohio-state.edu/~martini/Astro161a/index.html>

Homework Assignments

There will be four homework assignments during the quarter, each consisting of set of short answer or multiple-choice questions. The questions are open-book, open-notes, open-discussion. Homework will be due on the following Fridays:

Homework 1: Friday, January 22

Homework 2: Friday, February 5

Homework 3: Friday, February 19

Homework 4: Friday, March 5

Collectively the homework will count for 20% of your grade. The questions on the homework will generally be more challenging than those on the quizzes. They are designed to get you thinking about the course topics in an active way. I strongly encourage you to form study groups to discuss the questions, though you must decide on the final answers yourself.

Homework is due in class on the due date and no late homework will be accepted after class ends. Exceptions will only be made for legitimate, documented emergencies.

In-Class Quizzes

There will be four in-class quizzes on the following Fridays:

In-Class Quiz 1: Friday, January 15

In-Class Quiz 2: Friday, January 29

In-Class Quiz 3: Friday, February 12

In-Class Quiz 4: Friday, February 26

Your three highest quiz grades will count for 40% of your grade; I will drop your lowest quiz score. The quizzes will cover the material in the lectures and readings since the previous quiz. All of the quizzes are **closed-book, closed-notes multiple-choice** tests comprised of approximately 50 questions. You only need to bring a #2 pencil for the quiz.

Please mark your calendars with the quiz dates. The quizzes will be held at the normal class time and you will have the entire class period to complete the quiz. **Makeup quizzes are only offered by advance arrangement with the professor.** Exceptions are for legitimate, documented emergencies and require no advance notice. If you will be away on an official University-sponsored activity (e.g., sports teams, band, etc.), you must bring me a letter from your coach, director, etc. **in advance** of the quiz. Quizzes must be made up by the Wednesday after the missed quiz, otherwise that quiz becomes the one that I will drop in computing your final grade.

Final Exam

The Final Exam will be on **Wednesday, March 17 from 9:30-11:18am in the regular classroom.** Attendance at the Final Exam is mandatory. You only need to bring a #2 pencil for the final.

The final will be **comprehensive**, covering all lectures, and has the same multiple-choice format as the in-class quizzes, only it will be twice as long. It is worth 40% of your grade.

No makeup final will be offered. If you miss the final exam, you will be given an incomplete (I) with an alternative grade equal to getting a zero on the final, and have to make it up during Spring Quarter 2010 to avoid the alternative grade.

In keeping with official University policy, early finals will **not** be available for those persons who wish to depart early for the break. Please plan ahead and make your travel plans accordingly.

Grading Policy

- The four homework assignments will collectively account for **20%** of your grade.
- I will drop the lowest score of the four in-class quizzes, and use the scores on the three remaining quizzes to compute your grade. Together, these in-class quizzes count for **40%** of your grade.
- The final exam will be cumulative, covering all material from the class. It accounts for **40%** of your grade, and must be taken by all students.
- All grading, homework and exams, is done on a standard C+ curve. This means that the median class grade will be a C+.
- Class attendance and participation will factor into the determination of your final grade. Specifically, I will increase your grade by up to one fraction (for example from a B to a B+) if you have very good attendance *and* have participated in class.

Lectures

The daily lectures are your primary resource for this course. We will not cover all of the topics in the book and I will supplement the book with additional material that is not covered in the book. Outlines of each lecture will be available via the class website. These outlines are intended to be useful aids for studying and following along in class. I recommend that you print out the outlines, bring them to class, and take notes in the margins. Remember, these are only *outlines* of what I cover each day in class, not comprehensive transcripts of the lectures. In particular, I will show images and animations during class that will not be available on the class website. Because of the importance of the lectures, I will also take attendance on a semi-regular basis and consider both attendance and class participation in the determination of your final grade.

Historically, students who do not attend Astronomy 161 regularly score on average one whole grade below those who do attend class (e.g., a C instead of a B).

Recommended Readings

Recommended readings from the textbook and other sources are provided alongside the lecture outlines on the class website. Because I will not strictly follow the order of topics in the book, these readings are not always consecutive. The course will also include material that is not covered in the book, while it will not cover all of the material in the book. You are only responsible for the contents of my lectures, including material that is not in the book.

Students with Disabilities

Any student who feels that he or she may need an accommodation based on the impact of a disability should contact Professor Martini to discuss their specific needs. We will rely on the Office of Disability Services at OSU to verify the need for accommodation and to help develop the appropriate strategies. Students with disabilities who have not previously contacted ODS are encouraged to do so by visiting the ODS website (www.ods.ohio-state.edu) and requesting an appointment.

Academic Misconduct

All students are presumed to have read and understood Ohio State's Code of Student Conduct¹ and in particular to complete all assignments with fairness and honesty. All OSU professors are obligated to report suspected cases of academic misconduct to the Committee on Academic Misconduct. The most common forms of misconduct in classes such as this one is copying from another student's exam. All cases will be investigated following University guidelines.

¹ http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf

Classroom Etiquette

To help establish and maintain a courteous, distraction-free learning environment in our classroom, I ask that all students please observe the following basic rules of behavior during lectures and exams:

Use of cell phones and pagers is prohibited.

This includes using cell phones for instant messaging, email, web, pictures, etc. When in class, all cell phones and pagers must be **turned off** (i.e., not in a standby or "silent ring" mode).

Use of laptops and network devices is prohibited.

Surfing the web, instant messaging, reading email, or typing notes on a keyboard during class is very distracting to those around you. When in class, all laptop computers and network devices (e.g., PDAs, smartphones) must be turned off and put away. The only exceptions are approved devices for enhancing sound or vision for the hearing/vision impaired.

Please do not start packing up until class is completely over

Nothing is more rude or distracting than the noise of notebooks closing and jackets and backpacks rustling while the professor is trying to finish up. I'll be very clear when we're done, and I work very hard to stay on time, so please wait until I get to the end.

If you come late or have to leave early, please sit near the back of the room.

This will make your late arrival or early departure less disruptive for your fellow students.

No conversing during lectures.

Please respect your fellow students and do not carry on conversations during class.

Your cooperation in observing these rules is greatly appreciated.