Astronomy 121: The Solar System

Welcome!

Hello Welcome to Astronomy 121. Please read the syllabus (this page), buy an iclicker and register it. All of the readings are online and free (see below for details). The important dates to know are midterms and final. You must be here for the final and for at least one of the two midterms.

Midterm 1: February 14th Tuesday
Midterm 2: March 9th Thursday
Final: March 22nd Wednesday 12:30

These dates are immutable so don't email me about rescheduling a test for you unless you have official UofO reasons (sports, band, etc). You can't take the final early or any other time unless you are taking through the AEC. Again see below for all policies. Other than that, see you in class.

Instructor: Dr. Elsa Johnson
http://pages.uoregon.edu/elsa/index.html

Email: elsa@uoregon.edu

Office Hours: Weds from 11 to 1 in Willamette 177 or email for an appointment.

Required Materials:

1. IClicker - please register!!

Pre-requisites: None.
Introduction

Welcome to Astronomy 121, a course designed for non science majors. There is no textbook for this course. All reading materials will be freely accessible online and located here: Readings. We will explore the current discoveries happening in our Solar System, the upcoming total solar eclipse and the multitude of new exoplanets discovered. We will also discuss some basic physics relationships that are necessary in order to understand how we pull information, such as mass and composition of planets, from the data. You will also learn how to determine your location on Earth based on stellar motion and predict moon phases based on the time of day and position of the moon. Here is my advice for getting the most out of this course:

- Go to lecture and take notes
- Focus on understanding rather than memorizing questions and answers.
- Pay attention to due dates - can’t emphasize this enough.
- Put thought into the homework quizzes. Don’t just guess.
- Do all the work in the class - don’t skip homework assignments.
- Ask (relevant) questions during lecture if you have them.
- Make at least one friend in class to discuss concepts and for note taking if you miss lecture
- Give me feedback (email or office hours) if you are confused with a topic previously discussed.
- Always bring your iclicker to lecture!
- Again, go to lecture! The most successful students in previous courses went to most, if not all, of the lectures.

Grading

- Best 5 out of 6 homework assignments 25%
- Practice questions 10%
- Astronomy activity 10%
- Clicker questions/attendance 6%
- Best score of 2 midterms 22%
- Final 27%

If the median grade, which means ⬇ of class grades drops below C+/B- (79%) I will curve the grades. The curve will be applied to your cumulative score and not to individual tests, homeworks, etc. Typically the average for the tests is much lower than the homework. In the end, they balance out.
Course Policies PLEASE READ!!!

Email: 1) Read the syllabus first if your question pertains to grading or dates 2) Use common sense. I’m not going to deal with email after 9pm or before 9am. On fridays this will be from 4pm onward, so if you have a burning question that needs to be addressed immediately, don’t send it at these times or just don’t expect a response until the next day.

Extra Credit: There is no extra credit for this class

Late Policy: Late homework is accepted up to the minute before the next lecture but loses 10% of the total assignment points for each day the homework is overdue, and yes this includes non-lecture days and weekends. For example if it is due on a Monday and you turn it on Tuesday at 1:59pm you will lose 10% in points. If you submit it in at 2:01pm you will get a zero, even if you are not present in class.

Test make ups: You can’t make up a test due to vacation, cold, etc. due to the number of students in this class and potential number of rescheduled test times. In fact, this is why only one of your midterm scores counts - to avoid reschedules in case you miss the 1st or 2nd for whatever reason. If you have a U of O related duty (sports, band, etc) and the relevant documentation you can make up a test. If you have been extremely ill beyond your average cold or flu, please come talk to me or email me. If you can’t make either test due to other foreseen conflicts then you should reconsider taking the course.

Redos: There are no redos for homework or midterms for more points. However you should redo your homework and tests to prepare for the final.

Laptops/phones/Distractions: If you are distracting me because you are either talking, texting or watching videos on your computer, I will let you know and ask you to stop or leave. They are a major source of distraction for you and everyone around you unless you are using them for lecture. I hate texting and surfing on phones as well. If you need to text, do it as discretely as possible. If someone is bugging you with aforementioned items, I support you telling them to stop it. I can’t police every person in the class and I shouldn’t have to because this is college and you’re all adults who are responsible for your own academic success.

Final Test Date: The test will be offered at the scheduled time (12:30 pm Wednesday 3/22/2017). You can’t take it earlier or later, so make your vacation/work plans accordingly. According to school policy, if you have more than 3 (read 4) finals in one day you can reschedule the final. If this is the case for you, and
you asked your other professors first and you have proof of having 4 finals (copy of transcript or schedule) then I will reschedule the test for you only.

**Responsibility:** You are responsible for monitoring your grades and deadlines for homework. If you don’t see a grade for an assignment you submitted, you must let me know ASAP.

**Academic Honesty**

- **Copying:** Homework is to be done on an individual basis. You are free to study and discuss with someone, but if you and your study partner have identical answers or even just switch a few words or sentences around, this is considered copying and each results in zero credit for all similar answers. Even in a class this size, it is easy to catch so don't do it! I am brutal about this.

- **Cheating:** If you are caught cheating looking at your neighbor’s test or with notes either on your phone, any electronic device, a piece of paper, hat, arm, water bottle or whatever, you get an automatic 0 on the test. Therefore, no headphones, sunglasses, or phones during test time. If I suspect you looking at your neighbor’s test, I will ask you to move.

- **Avoiding Plagiarism:** Don’t cut and paste text from sources to answer questions - even if you use quotes and cite sources. Quotes are never used in science papers unless it's a book about a scientist. If you cut and paste test, change a few words and don't cite sources this is considered plagiarism and very very bad! Some professors make it a mission to go after students by notifying administrators and professors of the suspected plagiarist.

You may be asked to go look up information on other websites to answer certain questions. Again, you are to respond to these questions by writing the answer in your own words. **Do cite sources (a link to the website is just fine), but don't use quotes from the articles to answer the question.**

**Readings** I have selected MANY webpages and videos for course material. However, we probably won't get thru all of them. I will post a reading schedule on the canvas calendar so you know what to read and when. Go to this page for the reading list: Readings.

**Midterms and Final**

All tests will cover material discussed in lecture and in the homework. In other words, you will not be tested on some arcane fact from one of the readings unless we talked
about it in lecture or it was on the homework or practice/reading quizzes. The midterms will most likely be a blend of multiple choice, true/false, matching and short answer style. The final will be a similar format but longer and cumulative.

**Calculators**

There are no calculators allowed on midterms or finals for this course for reasons of cheating. Here is my experience...I used to require students to bring a simple scientific calculator to tests and I kept a supply of 20 calculators on hand in case someone forgot to bring theirs. Well it turned out that more than 20 forgot their calculators so it was a balancing act of trading calculators around which can be very disruptive during tests. It was also a challenge to walk through the aisles and determine if they were using a phone or calculator. Phones are strictly forbidden because I've caught students looking up notes during a test.

I am extremely gentle when grading math-related problems on test because of the no-calculator-for-tests rule. Generally I'm content if you get the steps down and don't simplify the answer. I will explain more when we get to any calculation in the class.

**Midterms**

You will be given 2 midterms- one *during week 6 (2/14) and one during week 9 (3/9)*. Your **midterm grade will be based on the highest grade of either test.** Since it is the best grade out of two midterms you are only required to take one. However, I strongly encourage you to take both unless you really don't have time to study for one of them. The reason for "best of two" exams is that I don't give make up exams unless there is an extreme reason (see above) and my make up exams tend to be hard compared to the in class midterm.

The second midterm may slightly overlap with material from the first midterm. I'll let you know which material will be relevant.

**Final**

The final will be in class in Lawrence Hall room 115 at **12:30 pm, Wednesday March 22nd.**

**iClickers and Attendance**

**Attendance is graded through iclickers.** Each lecture will have questions for you to answer spread throughout the lecture. This way you can interact with the material as you learn it. You are graded on effort and answering the questions, but not on having
You must answer 75% of the questions in order to get participation credit! Thus you should be present for the entire lecture.

You will be graded on 10 max attendances. That means you have to be in class 10 times (not including the test days) to receive the full 6% participation credit. Easy. You have at least six days to miss lecture for whatever reason - this is an equivalent of 3 weeks of lecture which is a lot! Ideally, be here for all of them unless you're sick - then please stay home and rest. In fact keep these "miss" days reserved for illness or some last minute emergency. Basically, think ahead and don't skip just because you don't feel like going to class. Illness and injuries extending for several lecture days are not exempt. In other words, you will still be expected to attend a full 10 lectures if you want the full participation credit. Jobs, interviews, vacations, transportation issues, family emergencies, or if you signed up for this course late are also not valid excuses. If any of the above happen (inevitably some will), you don't have to tell me or provide any excuse. Just come back to class as soon as you can.

The only exceptions for missing lectures are official UofO activities like sports, band, etc. You must give me the signed relevant forms from your coaches/advisors etc. I will give you participation credit for lectures days missed due to the activity. If the campus is closed due to snow/ice/some other reason on lecture day, then I will reduce the number of required attendances based on the number of snow days coinciding with lecture days. If you have a debilitating medical condition or mobility issues that make it difficult for you to attend lecture, I can restructure your grade such that it is based on midterm score, final, homework, project and practice quizzes only. You must let me know ASAP if this is something that would work best for you. Again I won't do this if your extended absence is due to vacation, work schedule, etc.

**Homework**

Homework is in the form of quizzes. Assignments will be electronically submitted via canvas using the quiz interface and instructions (if necessary) for each will be posted under each assignment group. Homework is meant to apply your knowledge, thus questions will be a little more than looking up stuff in the reading and a little more challenging. Some homework may involve using an online simulation or looking up new information. **You must do your own work!! No group assignments - otherwise you will be penalized for copying** and you don't want that. See policies in the blue box above for late homework and expectations. I go over solutions the following lecture after the due date. **I will only grade your latest submission. Use the practice quizzes to help you do the homework.** The due dates are presently fixed, but if I'm running behind on the lecture material, I will push the dates to a later day. Don't worry, I won't change the due dates to an earlier due date.
You will be graded on the best 5 out of 6 homeworks. Each is worth the same amount of points. You will be able to see your results and the correct answers once I unmute the grades which will be after the absolute deadline.

**Class Project**

You will complete one project due the Monday on the 10th week of classes. See this page Course Project or click on 'Pages' in the side menu for details.

**Practice and Reading problems**

In my experience best way to learn a subject is skim through material, then read thoroughly, summarize chunks of material and then repeatedly test yourself. The practice and reading problems are the test portion. Tentatively, there will be several quizzes (~10) which can be taken many times and at any time. Each quiz is weighted depending the the number of problems. I may write up more or less depending the difficulty of the topic.

For our purposes, practice problems are questions based on a physics concept or diagram or sky configuration that will be later seen in the homework and on tests. These types of problems are tricky for some and require much practice. So before attempting and submitting homework based on these topics, you can practice by doing somewhat similar problems. These will mainly be relevant for the first 1/2 of the term.

The other type of questions are reading problems. These are simply questions that test you on your understanding of the reading and lecture material. Basically you can find the solution embedded in the notes and readings. Both kinds of problems can be in any practice quiz.

Now for the awesome part, you will be able to see your grade after every quiz so you can improve upon your score until you get a perfect score. Canvas will keep your highest score too. To keep things challenging you won’t be able to see which problems you missed but just your final score. Also they are all due the Tuesday of finals week. Ideally you should keep up with the course and do the relevant quizzes throughout the term but you have until 3/21 to finish them.

I will be adding more quizzes in the first few weeks of the term.

**Lecture notes**

I post all lecture notes in canvas. They will be located under 'Files' on the side menu and linked in the calendar.
Canvas Interface and Grades

Canvas has many good features but also some very annoying ones. It is good because it consolidates all of the class work into one handy site. The downside is the way it handles the gradebook. The way Canvas calculates the total grade can and has been totally misleading for those who are not familiar how weights and percentages work. For instance, if you have submitted a total of 4 out of 5 assignments it will base your grade on those three assignments not 5. So if you got 100% on all 4 assignments but didn’t submit a 5th then your grade will read 100% and not 80%. Sometimes I forget to enter a zero for non-submissions and people are surprised when their grade goes down. Now you know. Another annoying aspect is that if you want to redo an old assignment that automatically grades questions, your grade will be changed on canvas and worse yet, will register as late. If this happens, don’t panic but instead email me and let me know that your grade has changed and I will change it back to what it was. Note, this will not effect the practice and reading quizzes since your highest score will be kept in the grade book.

Math

I am going to keep math at a very, very (5th grade) basic level. You just can’t avoid math and graphs in astronomy it is impossible. Astronomy for professional astronomers is all about data, which means graphs and math. You measure light from stars in different wavelengths, graph the data, do some statistics and the data will tell you something new and interesting (or sometimes it’s inconclusive). Math for this course is to explain physical phenomena. Given the huge diversity of objects and their physical motions in the Solar System and beyond, there are only a few elegant physics principles that explain their composition and motion. You will see these physical principles in the form of equations in class. Before some of you reconsider taking this course due to the math, you will have ample and examples to practice. I promise to keep the equations super light and doable. If you want a hint of the difficulty, just know how exponents work like $2^3 = 8$ and simple fraction multiplication and division like $1/2 * 1/2 = 1/4$ or $1/(1/12) = 12$.

Help

Unfortunately, we don’t have any astronomy graduate TAs, so astronomy help is limited to my office hours (and email if you can’t make the office hours). I’ll send out emails and announcements if many are confused on the same topic.

Accessible Education Center
If you need special accommodation for tests, homework, etc please contact the Accessible Education Center ASAP! They provide documentation that helps me determine what works best for each individual. Plus please talk to me if something works for you not mentioned on the forms from AEC. If you need extra time for an assignment I can give it to you provided you have the documentation.

**Final Note from yours truly:**

If you are having problems keeping up with the work- please see me, talk to me, tell me what's going on. Maybe I can help or at least point you in the right direction for help. I was an undergraduate once and I remember the fun, the drama, the workload, the stress. I will help you get on track in this class provided you are helping yourself to get back on track too. This is never stated enough, but the real way to learn something new is to accept that struggle and failure are a part of the process. Seriously. We do this so much in physics whether it's calculations or taking data or programming that you know your first 10 or more trials are going to suck....And then you keep doing it until you get it right. That's how real life works. Our society focuses too much on the end product of awesome skills and forgets there was a struggle to get there. So don't give up!

I really want you to get something positive from the course - whether it's one topic that totally captures your imagination or just a general appreciation and new perspective of our place in the Universe. Let's make this a great term!

I'll leave you with my favorite quote from JFK's historic Moon speech at Rice University.

https://www.youtube.com/watch?v=6z1DidlxUo