Astronomy 1050

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Class Meeting Times: Lecture M-T-TR-F 10:35-11:50, Lab T-W-TH 1:20-2:40

Office Hours: M-T-W-TH-F 3:00-4:00 PM or by appointment

Course Goals:

- Develop a basic understanding of astronomy topics
- Practice mathematical and scientific skills
- Learn about how current astronomical research is accomplished

Textbook

For this course we will be using the open source textbook that can be found at the following url:

`https://openstax.org/details/books/astronomy`

This book should be a great source of supplemental material for this course! If you would like to purchase a copy, you can also do that for forty dollars on amazon, but you will not be able to sell it back to the university book store, as we are trying to avoid them to save you money for this course. Please download or obtain a copy however you would like, as we will be doing some problems and work from this book throughout the course.

Homework/ Reading quizzes

There will be two short, written homework assignments due as part of this course. I will assign these one week before they are due, and they should not take more than a few hours. Outside of these written assignments, there will be brief (3-5 short question) reading quizzes posted on wyocourses each night. These should be fairly easy to answer if you do the reading, and will be open book/open note. They will also include a optional questions/comments section where you can add any thoughts you have about the reading, or any sections you hope I will spend more time going over in class.

PollEverywhere

This class will use PollEverywhere throughout as a way for you to answer questions and start discussions. Please register (it's free!) at: `https://www.polleverywhere.com/`. Once you have done this, you will be able to participate in the polls I give in class. These will not be graded, but will help us see what topics we understand, and what is still a little confusing.

Tests and Quizzes

There will be a short midterm and final associated with this class. These will each be worth 20% of your grade. Outside of these, there will be two very short 'talk-y things' (10-15 minute oral quizzes) where you will come in and answer a few questions I have. These should not be overly stressful, instead think of them more as a way for me to asses how the class is doing and what we will need to spend more time on. They will each be worth 5% of your grade.

Active Learning

Throughout this course, I will be attempting to move away from the traditional lecture style of teaching as much as possible, instead trying to work with you through a

method of instruction called "Active Learning". This teaching style has been shown to develop a more concrete understanding of the material by getting the learners to participate in activities and discussions as often as possible. Although this may sound like more work for you, I hope to make this a fun experience, with activities to stimulate your curiosity and help build a more complete understanding of the materials I cover. In order to do this, I will need your cooperation though. Please come to class ready to engage and explore! More information on the benefits of active learning can be found at these links:
`http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf` (Slightly longer research paper showing the benefits of active learning)
`https://teachingcommons.stanford.edu/resources/learning-resources/promoting-active-le` (Brief summary of what active learning is, and why it is a good method for teaching)

Attendance and Participation

As we are going to be doing a lot of activities during class, attendance is very necessary for your learning. Some of the small activities we do in class will be graded for completeness, and this will correspond to 10 % of your grade. You two lowest grades will then be dropped (essentially, this means you can miss two classes without a drop in grade), but please try to attend class every day. Excused absences are acceptable, just try to let Jessica know when and why you will not be able to attend class.

A few course rules

The main rule I have for this course is that I need you all to show respect to your classmates, the course, and me. The most important part of this means that I require you all to make this a safe space for other students to ask and answer questions without feeling like they will be criticized or judged by their peers. If I see anyone making fun of or laughing at another student, I will ask you to leave the class until your are ready to participate in a way that will not discourage others from learning. As long as this is the case, I believe we can all work together well without the need of strict rules. I do ask that you try to be on time and prepared for classes, and just remember that everyone is here to learn, so try not to distract from that process!

Late Work

I understand that sometimes we all forget an assignment or have other things come up. In order to account for this, the two lowest lab scores and three lowest reading quiz scores will be dropped from your grade. So, if you miss something do not panic, this does not mean you will fail the course! Just try to stay on top of your assignments, and I will do my best to give reminders throughout the semester. As there will only be a few longer homework assignments, I will not be dropping and of these scores. Instead, I will deduct 2% for each day late (weekends count as one day). If there is some emergency, please let me know and we can work around this.

Course Schedule

Day	Subject	Reading
Week 1	Introduction to Astronomy	
Monday	Syllabus and Introductions to course	None
Tuesday	No class, 4th of July	None
Thursday	Measuring the Sky	Chapter 2.1, 4.1-4.2
Friday	Gravity and Orbits	Chapter 3
Week 2	Planets and the Solar System	
Monday	The Earth and The Moon	Chapter 8.1-8.4, Chapter 9.1-9.4
Tuesday	Finish Earth and Moon	Chapter 9.5
Thursday	TheTerrestrial Planets	Chapter 10
Friday	The Gas Giants and Pluto	Chapter 11 (all)
Week 3	The Sun and Stars	
Monday	What we can learn from light	Chapter 5 (all)
Tuesday	The Sun	Chapter 15.1-15.2,
Thursday	Energy Production in Stars	Chapter 16
Friday	**Midterm**	None
Week 4	The Lives of Stars + Into to Galaxies	
Monday	Classifying Stars	17.2-17.4 through Abundance of Elements,
Tuesday	Variable Stars and Distances	18.2, 18.3, 19 (all)
Thursday	The Lives of Stars	Chapter 22
Friday	The Deaths of Stars	Chapter 23
Week 5	Galaxies and the Universe	
Monday	The Milky Way	Chapter 25 (all)
Tuesday	Classifying Galaxies	Chapter 26
Thursday	Galaxy Evolution	Chapter 28
Friday	The Big Bang and History of the Universe	Chapter 29
Week 6	TBD	
Monday	TBD	
Tuesday	TBD	
Thursday	TBD	
Friday	**Final**	

TBD parts of syllabus

You might have noticed that the last week on the schedule is 'TBD'. This is because I want you to have some input on what you want to learn about in this class. You all signed up for this class because you are interested in astronomy, and I want to make sure I cover everything you were hoping to learn about. Below are some topics we could cover in those last weeks:

- Rockets and Space Travel
- Current NASA and other space agencies' missions
- Exoplanet detection characterization
- Dark Matter: What is it and how do we know it's there?
- Black holes and Other strange objects
- Aliens! The new field of astrobiology
- LIGO and Gravity Waves
- The history of astronomy
- Asteroids, Comets and other space debris
- Telescopes

If there are other topics you are interested in, please let me know! Our second reading quiz will include a vote, and the most popular topics will be added to the schedule for the last week of class.

Grading

The grade for this class will be broken down as:

- 10 % Attendance and Participation
- 10 % 'Talk-y Things'
- 20 % Midterm
- 20 % Final

- 15 % Homework
- 10 % Reading Quizzes
- 15 % Labs

I truly believe that if you attend class and do the work, you will get at least a B. Please come talk with me if you believe any of this is unfair or you feel like you will not be able to obtain the results you want from this class.

Syllabus Disclaimer

This syllabus is subject to change and may be updated throughout the semester.