

# Astronomy 151 Syllabus

*A Journey Through the Solar System*

*Spring 2020 Semester*

*University of Tennessee, Knoxville*

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## Course Details

**Instructor:** Dr. Sean Lindsay (he/him/his) E-mail: [slindsay@utk.edu](mailto:slindsay@utk.edu)

**Class Times:** 12:20 – 1:10 PM Monday, Wednesday, and Friday

**Class Location:** PHYS 415, Nielsen Physics and Astronomy Building

**Course Number:** ASTR 151-002, CRN: 24023

**Dr. Lindsay's Office:** PHYS 215 Phone: 865-974-2362

**Office Hours:** Wednesday 3 – 5 pm & Thursday 10 am – 12 pm; or by appointment

**Course TAs:** Primary: Brittney Contreras ([bcontrer@vols.utk.edu](mailto:bcontrer@vols.utk.edu))

Secondary: Cole Wampler ([swample1@vols.utk.edu](mailto:swample1@vols.utk.edu))

### Course Resources:

**Textbook:** No Official Course Textbook.

I rely on my extensive course notes provided to you for free.

Recommended Optional Text: At Play in the Cosmos by Adam Frank  
W.W. Norton

Additional Text Resource: Openstax's *Astronomy*

Link: <https://openstax.org/details/books/astronomy?Book%20details>

**Parallel Lectures:** *Crash Course Astronomy* with Dr. Phil Plait

Hyperlink to Youtube Channel: [Link](#)

**Course Website:** Canvas

**Required Course Materials:** 10 3 x 5-inch note cards, any calculator

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## Course Description

This course is an introduction to astronomy and an exploration of our solar system. The course is divided into three broad units. I am working on providing you with a more detailed class schedule that I hope to release on Canvas before or early into the semester

### Unit 1: General Astronomy

This unit introduces you to astronomy as a science. It covers what astronomy and science are; the daily, yearly, and longer-period motions of the Earth and how that changes the sky on those timescales; the motions of the Moon and planets; gravity and basic Newtonian mechanics; the electromagnetic spectrum of light; the interaction of light with atoms and molecules; and telescopes.

## **Unit 2: The Solar System and General Planetary Science**

This unit gives an overview of the Solar System. It covers what objects are in the solar system, how the solar system formed, and how planets form. Additionally, this unit covers planetary systems outside of our own focusing on how we detect those planets, what types of planets we have detected, and how that larger perspective increases our understanding of our own solar system's formation. Since, out of all the solar system bodies, we know the most about the Earth and Moon, the Earth-Moon system is included in Unit 2. We will use the Earth and the Moon to talk about generalities of terrestrial worlds in the universe.

## **Unit 3: A Journey Through the Solar System**

This unit provides an introduction to the planets and moons of the solar system. We begin with the other terrestrial planets (Mercury, Venus, and Mars), the gas giant planets (Jupiter and Saturn), and the ice-giant planets (Uranus and Neptune). We focus on the general properties of the planets, their features, internal structure, atmospheres (if they have them), and their evolution to their current state. If time allows, we will hold a special topics session at the end of the semester on a class-voted on topic, such as the Sun, life in the universe, or astronomy outside of solar system.

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## **Course Components**

### **Attendance**

***Attendance counts for 10% of your overall course grade.***

Attendance is monitored via 10 random checks throughout the semester. You are allowed to miss TWO attendance checks without any penalty to your Attendance grade. Each miss after that will negatively affect your Attendance Grade. Attendance for nine sessions earns you +0.5% to your course average. Perfect attendance for all 10 sessions earns you +1.0% added to your final average.

Attendance checks will be done via "Note Card Questions" (NCQs). For this, you will need to purchase 3x5 inch notecards and have them with you in class in case there is an attendance check. During lecture, I will ask you to answer a question on the notecard. You will respond to the question and put your name and Vol Card ID # on the notecard. I will collect then collect the notecards, and your attendance will be marked. The questions are usually fun and/or silly questions that I hope you enjoy answering.

See the Attendance Grading Scale in the Course Grades Section below for details.

### **Homework Assignments**

***Homework assignments count for 15% of your overall course grade.***

All homework assignments are assigned on Canvas. The assignments are designed by me and are done so in an effort to aid you in learning the material and mastering the skills required to succeed in this course. Please complete all homework assignments by the due date. I always try to give you at least one full week to work on each homework assignment.

You get three attempts for every assignment. The highest of your three attempts is taken as your grade for that homework assignment. Use them wisely and take notes as you work

through each attempt. Canvas's homework system has some unfortunate quirks that you will likely find annoying. For each attempt, you have to work every question, even if you got it correct on the previous attempt. It also shows no mercy on the due time. You have up until the due time, which is always 11:59 pm of the listed due date. If you are even a minute late, it will give you a zero. Please be aware of this and start your homework early.

### In-Class Quizzes

***Your Quiz Average counts for 15% of your overall course grade.***

There will be SIX in-class quizzes, two before each in-class exam. Quizzes will be given at the beginning of the class period and last for 10 minutes after the last quiz is in student hands.

#### Details

Each quiz will have 12 questions, and your lowest quiz will be dropped. This gives  $5 \times 12 = 60$  total earnable quiz points. Your quiz average will be calculated out of 55, which gives everyone 5 free quiz points. Every point over 55 earned will count as an extra credit point to your quiz average.

*Example 1:* After the lowest quiz is dropped, Student 1 has 49 quiz points. Their quiz average for the course will be  $49/55 = 89.1\%$ .

*Example 2:* After the lowest quiz is dropped, Student 2 has 57 quiz points. Having over 55 points earns Student 2 a 100% quiz average, and the two extra quiz points count as extra credit on their quiz average. That is, their quiz average for the course will be  $100\% + 2\% = 102\%$ .

*Make-up Policy:* The make-up policy for quizzes is dropping your lowest quiz score... even a 0 for missing that quiz. See Exam Make-up Policy for details.

### In-class Examinations

***Each exam counts for 20% of your course grade. Three of the four exams count, given a total weight of  $3 \times 20\% = 60\%$  of your overall course grade for examinations***

There will be THREE in-class exams and ONE comprehensive final exam during the university designated final exam time period for this class.

#### Details

In-class exams will last the entire class period and have 55 questions. They are scored out of 50, given everyone 5 free questions to miss per exam without penalty. Each point above 50 counts as an extra credit point. The exams will be Fill-in-the-Bubble-type multiple choice exams. In addition to the 55 multiple-choice questions, each exam will have extra credit short-answer questions worth up to 5 extra credit points.

The final exam is comprehensive and offered as a way to replace a missed in-class exam score or a low-exam score you would like me to forget about. The final covers all course material, and is therefore, notably more difficult, but designed to reward those that study and have a broad understanding of the course material.

*Make-up Policy:* There is no making up missed exams for any reason except for University scheduled events such as sports team obligations and UT Marching Band. Circumstances not considered for make-ups: Illness, car problems, over-sleeping, vacations, disciplinary actions, and Greek events. With an average of 400 students per semester, vetting excuses and scheduling make-ups is woefully problematic and time-consuming. If you think you have a valid excuse (e.g., a university function such as athletics or band), please contact me during office hours or by email to request a make-up.

### Extra Credit (EC) Opportunities

***You can earn up to +5% added to your course grade via our Astronomy Extra Credit opportunities.***

There are a variety of ways you can earn extra credit in this class. You can turn in four extra credit assignments per semester. Sessions attended and date-stamped (provided at session) prior to Monday, 4 November earn +1% to your course grade. Sessions attended on or after Monday, 4 November earn +0.5% to your course grade. An additional point of extra credit can be earned through attendance.

We offer two types of telescopic observations and two types of planetarium sessions. The two observation sessions include night-sky viewing and solar viewing. The two planetarium session types include planetarium films and planetarium shows. You can do any four sessions to earn your extra credit. I also offer credit for attending an outside of Knoxville-area planetarium, museum with space-science of any kind, or any star party. These special sessions require some form of proof of attendance.

**You earn your credit by 1) Attending the session, and 2) turning in the completed stamped form you receive at the session with a 400 word typed essay attached to me within two weeks of attending the session. Essays need to include details on what you did during the session, what you learned, and your impression of the session (was it useful and/or fascinating?).**

For details on each session, please see the Extra Credit Sessions Information document on Canvas

There are no additional extra credit opportunities. I will not offer ANY additional last-minute extra credit for you to personally improve your grade because “you really need that extra half-point to get a B.” You have all semester to earn a lot of extra credit. DO IT EARLY!

## Course Grades

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All grades are calculated according the following grading weights and on the following grading scale.

### **Course Grading Scale**

Letter Grade	Percentage Range
A	90.00 or greater
B+	87.50 – 89.99%
B	80.00 – 87.49%
C+	77.50 – 79.99%
C	70.00 – 77.49%
D+	67.50 – 69.99%
D	60.00 – 67.49%
F	Less than 60.00%

Grade Category	Weight Percent
Exams	3 at 20% each Final can replace one exam
Quiz Average	15%
Homework Average	15%
Attendance	10%

Grade Rounding Policy: I do not round grades for any reason or special pleading. I offer enough points in this class for the decimal places to have meaning. I also offer an extraordinary amount of extra credit that you could have done to boost your grade. Rounding won't happen no matter how hard you beg, so save us both the time and number of emails and make sure you understand this policy.

### **Attendance Grading Scale**

Attendance Grade Earned for each number of checks										
Present for	10	9	8	7	6	5	4	3	2	1
Grade %	100	100	100	90.0	77.5	65.0	52.5	37.5	22.5	10.0

Zero Checks: 0.0%

9 Checks: +0.5% added to course grade

10 Checks: +1.0% added to course grade

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## Course Policies

### Cheating/Academic Dishonesty

Cheating of any kind will not be tolerated. This includes looking off others' papers; using electronic devices to get answers to questions for homework assignments; falsifying attendance data for another student; using social media platforms to share answers; and homework groups where one poor sacrificial student takes the hit to get the answers for the rest of the group.

I am probably more tech-savvy than you guess, and I am aware of many of the social media platforms commonly used for cheating (GroupMe, Google Drive, Chegg, Quizlet, etc.). I will actively be trying to gain access to any of these groups through trusted people in my classes who dislike cheating as much as I do. If you are interested in keeping academic fairness and honesty alive and well, please contact me privately, and we can discuss secure and anonymous ways to do so.

Consequences for getting caught cheating are severe. First time offenders will receive no credit for the assignment cheated on and will have their maximum grade in that grade category reduced to 65%. Cheating on exams will result in a 0 on that exam that cannot be replaced by taking the final exam. Second offenses result in failure of the course and a report to the Office of Student Conduct. Extreme cases of cheating will result instant course failure and a report to the Office of Student Conduct.

## Technology in the Lecture Hall

### **Computers**

Okay to take notes, but if you do, please keep your screen on the notes.

Do not check your email, Facebook, etc.

Do not watch videos... I've seen a lot of Netflix in here

Do not play games

### **Cell Phones**

Put on silent during lecture. This is especially important with new two-factor verification to log onto UT accounts.

## Student Issues

If you have any concerns that you would like me to know about, please see me or email me early in the semester. I understand that many of you have jobs, complicated family circumstances, private personal struggles, or a whole host of other factors that could affect your performance in this course. If you can let me know early, and before it becomes a problem in the course, I am almost always happy to work with you in order to foster an optimal educational experience. Please feel free to approach me during my office hours or via email.

## Student Disability Service

I always work fully with the Student Disability Services (SDS: <https://sds.utk.edu/> or by phone at 875-974-6087) in 915 Volunteer Blvd/100 Dunford Hall. If you have a known or suspected disability, please contact SDS to establish accommodations. The offices have a wonderful staff that are extraordinarily helpful. If you do have SDS accommodations, they will let me know, but I encourage you to contact me to discuss how we can work with the accommodations to make your astronomy experience the best for your needs.

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## Course Schedule

*Spring 2020 Astronomy Tentative Exam Schedule – Dates subject to change*

*Dates in red are set.*

<b>Examination</b>	<b>Date</b>	<b>Material</b>
Exam 1		Unit 1.1 through 1.3
Exam 2		Unit 1.4, 1.5, Unit 2.1
Exam 3		Unit 2.2, 2.3, Unit 3.1
Final Exam (Optional)	<b><i>Fri., 1 May.12:30 – 2:30 pm.</i></b> Location: PHY 415 (our normal lecture hall)	Comprehensive

### *Spring 2020 Quiz Schedule*

<b>Quiz Number</b>	<b>Date</b>
Quiz 1	
Quiz 2	
Quiz 3	
Quiz 4	
Quiz 5	
Quiz 6	

### *Spring 2020 Homework Assignment Schedule*

<b>Quiz Number</b>	<b>Date</b>
Homework 1	
Homework 2	
Homework 3	
Homework 4	
Homework 5a & 5b	
Homework 6	
Homework 7	
Homework 8	
Homework 9	