

# ASTR 201

## The Sun and its Planets

Fall 2017

TR 11:30AM-12:45PM

Sears 480

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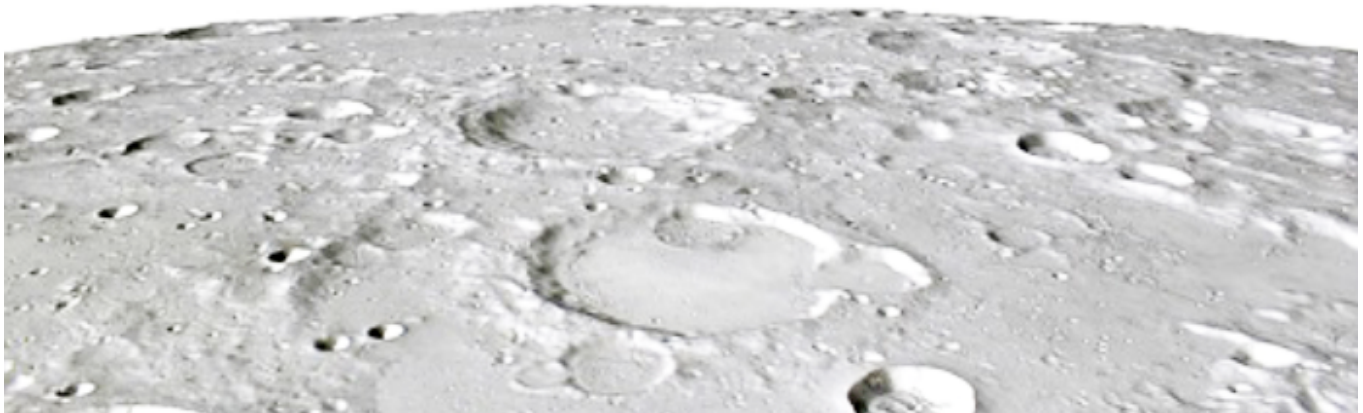
**Website:** <http://astroweb.case.edu/ssm/astr201/>

The syllabus, all assignments, homework, etc. are posted on the course website. Check frequently for updates and schedule changes.

**Textbook:** *21st Century Astronomy - The Solar System* (5th edition) by Kay, Palen, & Blumenthal  
Note: this book comes in two volumes. This is volume 1. You do not need volume 2 (Stars and Galaxies), nor the full (combined) text. You may use either paper and/or e-book versions. See the [digital resources](#) available from the publisher, including the videogame *At Play in the Cosmos*, at <https://digital.wwnorton.com/astro5solar>.

### Course Description

An overview of the solar system; the planets and other objects that orbit about the Sun and the Sun itself as the dominant mass and the most important source of energy in the solar system. Concepts and the development of our knowledge will be emphasized. Not available for credit to astronomy majors.



# ASTR 201 LECTURE SCHEDULE

Links to lecture slides are updated after each lecture.  
Until then, future dates link to *last* semester's slides.

Date	Lecture Topic	Reading	Work Due
Aug. 29	<a href="#">Introduction; Cosmic Scale</a>	Chapter 1	
Aug. 31	<a href="#">Scientific Method</a>	Chapter 1	
Sep. 5	<a href="#">Seasons and the Appearance of the Sky</a>	Chapter 2	
Sep. 7	<a href="#">Lunar Phases &amp; Eclipses</a>	Chapter 2	
Sep. 12	<a href="#">Competing Cosmologies</a>	Chapter 3	HW#1 DUE
Sep. 14	<a href="#">Kepler's Laws</a>	Chapter 3	
Sep. 19	<a href="#">Gravity &amp; the Laws of Motion</a>	Chapter 4	
Sep. 21	<a href="#">Tides</a>	Chapter 4	
Sep. 26	<a href="#">Exam I Review</a>	Chapters 1-4	HW#2 DUE
Sep. 28	<b>EXAM I</b>	Chapters 1-4	Exam Day
Oct. 3	<a href="#">Electromagnetic Radiation</a>	Chapter 5	
Oct. 5	<a href="#">Spectra &amp; Telescopes</a>	Chapter 6	
Oct. 10	<a href="#">Solar System Contents</a>	Chapter 7	
Oct. 12	<a href="#">Solar System Formation</a>	Chapter 7	HW#3 DUE
Oct. 17	<a href="#">Terrestrial Planets: General</a>	Chapter 8	
Oct. 19	<a href="#">Terrestrial Planets: Individual</a>	Chapter 8	
Oct. 24	FALL BREAK	————	
Oct. 26	<a href="#">Terrestrial Planets: Atmospheres</a>	Chapter 9	
Oct. 31	<a href="#">Terrestrial Planets: Climate</a>	Chapter 9	HW#4 DUE
Nov. 2	<a href="#">Exam II Review</a>	Chapters 5-9	
Nov. 7	<b>EXAM II</b>	Chapters 1-9	Exam Day
Nov. 9	<a href="#">Jovian Planets</a>	Chapter 10	
Nov. 14	<a href="#">Moons of the Solar System</a>	Chapter 11	
Nov. 16	<a href="#">Asteroids &amp; Meteorites</a>	Chapter 12	HW#5 DUE

Nov. 21	<a href="#">Drake's Equation</a>	Chapter 24	
Nov. 23	THANKSGIVING	————	
Nov. 12	<a href="#">Comets</a>	Chapter 12	
Nov. 30	<a href="#">Dwarf Planets</a>	Chapter 12	
Dec. 5	<a href="#">Exoplanets</a>	Chapter 7	
Dec. 7	<a href="#">The Sun</a>	Chapter 14	HW#6 DUE
Dec. 18	<b>FINAL EXAM</b> (3:30-6:30pm)	<a href="#">Review Notes</a>	Exam Day

## Learning Outcomes

After taking this course, students should be able to

- Relate observations of the night sky: rising and setting motions, lunar phases, stars and planets
- Describe Earth's motion in space and how it affects the sky we see
- Explain the reasons for seasons, lunar phases, and eclipses
- Outline the Ptolemaic and Copernican cosmologies
- Describe the roles of Copernicus, Brahe, Kepler, and Galileo in the Scientific Revolution
- Describe and apply Newton's Laws of Motion and Universal Gravity
- Explain the nature of electromagnetic radiation
- Describe thermal radiation and Kirchoff's Laws
- Summarize properties of telescopes and their instrumentation
- Discuss solar system formation and structure
- Describe properties of planets, their moons, dwarf planets, comets, and asteroids
- Explain the techniques for detection of exoplanets
- Discuss the general properties of known exoplanets
- Distinguish the basic traits of legitimate science, and the methods of scientific reasoning
- Paraphrase conceptual ideas through written and verbal work (homework, exams, and papers)

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### Fall 2017

## Grading

Grades are based on a point scale with different assignments weighted as shown in the table. The points are distributed across a variety of exercises so that no single thing will dominate your grade. However, this also means that it is imperative that you complete all assignments. We will drop the lowest homework, but zeros on multiple homeworks fail to add up in a big way.

ASSIGNMENT	Homeworks	Exam I	Exam II	Final	Total
POINTS	150	100	100	150	500

Letter grades will be assigned based upon your cumulative score. Here is how your grade will be determined from your point total in the class:

Letter Grade	Course Total	Percentage
A	450-500	90%-100%
B	400-449	80%-89%
C	350-399	70%-79%
D	275-349	55%-69%
F	0-274	0%-54%

The point scale makes it possible for everyone in the class to do well. For example, if everyone scores above 90% in the course, you would all receive A's. On the other hand, if no one does this well, I may adjust the number of points required to get a given grade. Any adjustment will make it easier to get a given grade, never more difficult (i.e., any curve that is applied can only benefit your grade).

# ASTR 201 Assignments

## Homeworks

Assignment	Points	Due Date
<a href="#">Homework #1</a>	30	Tuesday, Sep. 12
<a href="#">Homework #2</a>	30	Tuesday, Sep. 26
<a href="#">Homework #3</a>	30	Thursday, Oct. 12
<a href="#">Homework #4</a>	30	Tuesday, Oct. 31
<a href="#">Homework #5</a>	30	Thursday, Nov. 16
<a href="#">Homework #6</a>	30	Thursday, Dec. 7

There are 6 homeworks with 6 problems worth 5 points each, plus one extra credit problem worth 2 points for each homework assignment. We will drop your lowest homework score so that your grade will be based on the best 5 out of 6 homework assignments. *There will be no make-ups. Neither will there be extra credit, except for the occasional in-class exercise.*

All homeworks are due at the *beginning* of lecture on the date specified. Homeworks are late (and suffer a 5 point penalty) after lecture begins. The end of lecture is the last opportunity to turn in homeworks with a 5 point late penalty. After that, homeworks will no longer be accepted.

Always put your name on your homework. Be sure to type or write neatly - we can not give credit for things we can not read. For things like multiple choice questions, it is necessary to demonstrate understanding. *Succinctly* explain *why* the answer you chose is correct. It isn't good enough to get the right answer; you need to understand *why* it is the right answer.

## Exams

Exam	Points	Date	Time	Place
Exam I	100	Thursday, Sep. 28	10:00-11:15am	Sears 480
Exam II	100	Tuesday, Nov. 7	10:00-11:15am	Sears 480
Final Exam	150	Monday, Dec. 18	3:30-6:30pm	Sears 480

### Midterm Exams

There will be two in-class examinations during the semester as noted above. These exams are closed book with no notes, calculators, cell phones, ipods, or implants allowed. Each exam will consist of

multiple choice questions, essay questions, and problem solving questions. Just your brain and the writing instrument of your choice. If for whatever reason, the University is *officially* closed on the exam date, the exam date shifts to the next lecture date.

### **Final Exam**

The final exam is cumulative; it will cover *all* material discussed in this course. Some extra emphasis will be given covered after the second midterm. The final will include multiple choice, essay, and problem solving questions, greatly resembling a longer version of the midterms.

*Note the date of the final exam. Do not make plans to leave campus before the final!*

### **Missed Exams**

The first rule of missing exams is:

**DON'T**

If you are not able to take an exam due to illness or some other legitimate reason and you wish to take a make-up exam, you **must**

1. contact me (by voice or e-mail) **before** you miss the regularly-scheduled exam and
2. document a valid excuse for your absence.

Make-up exams must be taken promptly. Note that in the case of the final exam, there is an extremely narrow window before final grades must be submitted.

# ASTR 201

## HOMEWORK ASSIGNMENTS

Homework problems are assigned from the **5th edition** of the textbook *21st Century Astronomy - The Solar System*.

*Be sure you are doing the right homework problems!* Other editions of the text will have different questions. Some homework problems are to complete the electronic homework for a given chapter from the digital resource [Smartwork5](#).

There are 6 homeworks with 6 problems worth 5 points each, plus one extra credit problem worth 2 points for each homework assignment. Completing all the questions for a given chapter in [Smartwork5](#) counts as one 5 point homework problem.

All homeworks are due at the *beginning* of lecture on the date specified. Homeworks are late (and suffer a 5 point penalty) after lecture begins. The end of lecture is the last opportunity to turn in homeworks with a 5 point late penalty. After that, homeworks will no longer be accepted.

The regular homework problems must be handed in on paper and will be graded by hand. Your Smartwork responses will be recorded automatically. There is no penalty for getting Smartwork questions wrong, or for taking many tries to get them right. Points are only deducted for not doing it.

Remember to put your name on your homework! Be sure to type or write neatly - we can not give credit for things we can not read. For multiple choice questions, don't just say (c) but also give some context by writing out your answer in a complete sentence.

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### Homework #1 (30 Points) Due Tuesday Sep. 12

1. [Smartwork5](#) Ch 01 Homework
2. [Smartwork5](#) Ch 02 Homework
3. Chapter 1, #15
4. Chapter 1, #36
5. Chapter 2, #9
6. Chapter 2, #31
7. Chapter 1, #38 (extra credit)

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### Homework #2 (30 Points) Due Tuesday Sep. 26

1. [Smartwork5](#) Ch 03 Homework
  2. [Smartwork5](#) Ch 04 Homework
  3. Chapter 3, #9
  4. Chapter 3, #33
  5. Chapter 4, #6
  6. Chapter 4, #31
  7. Chapter 3, #37 (extra credit)
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### **Homework #3 (30 Points) Due Thursday Oct. 12**

1. [Smartwork5](#) Ch 05 Homework
  2. [Smartwork5](#) Ch 06 Homework
  3. Chapter 5, #7
  4. Chapter 5, #13
  5. Chapter 6, #7
  6. Chapter 6, #12
  7. Chapter 5, #44 (extra credit)
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### **Homework #4 (30 Points) Due Tuesday Oct. 31**

1. [Smartwork5](#) Ch 07 Homework
  2. [Smartwork5](#) Ch 08 Homework
  3. [Smartwork5](#) Ch 09 Homework
  4. Chapter 7, #32
  5. Chapter 7, #37
  6. Chapter 8, #36
  7. Chapter 9, #39 (extra credit)
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### **Homework #5 (30 Points) Due Thursday Nov. 16**

1. [Smartwork5](#) Ch 10 Homework
  2. [Smartwork5](#) Ch 11 Homework
  3. Chapter 10, #9
  4. Chapter 10, #37
  5. Chapter 11, #6
  6. Chapter 11, #8
  7. Chapter 11, #35 (extra credit)
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### **Homework #6 (30 Points) Due Thursday Dec. 7**

1. [Smartwork5](#) Ch 12 Homework
  2. [Smartwork5](#) Ch 14 Homework
  3. Chapter 12, #11
  4. Chapter 12, #31
  5. Chapter 14, #11
  6. Chapter 14, #35
  7. Chapter 12, #36 (extra credit)
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