

# ASTR100: Introduction to Astronomy

## Sections 0101-0107, Fall 2009



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Office Hours: Tu 11am-noon and W 2:30-3:30pm

**Textbook:** [The Essential Cosmic Perspective](#) (5th edition), by Bennett, Donahue, Schneider, & Voit.

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## Class Meetings

**Lectures** meet in PHYS 1412 on TuTh from 9:30am to 10:45am.

Lectures are led by the professor and will include demonstrations, slides, videos etc.

**Discussion Sections** meet in CSS 2400 at times listed below. Discussion sections are led by graduate student Teaching Assistants (TAs). The sections provide a smaller and more informal environment for further developing the material taught in class and answering questions that arise. Activities in section account for over 20% of your course grade, so attendance and participation are important.

## Course Description

Welcome to Astronomy 100! You are about to embark on an ambitious project - to survey our known Universe in one short semester. We hope that you'll find this course enjoyable and walk away with a better knowledge and understanding of the universe that we live in. With that goal in mind, the course attempts to focus on major concepts in astronomy and where possible tie those concepts into issues relevant to your life. For example, global warming, an important

worldwide issue for the 21st century, is also central to understanding the differences between the environments of Venus, Mars, and Earth. At a more philosophical level, understanding how our universe works and how planets, stars, and galaxies form and evolve gives us a better perspective on our place in the universe and how special planet Earth is to our continued survival.

## Core Requirements

You may have chosen this course as part of your CORE Liberal Arts and Sciences Studies Program, the general education portion of your degree program. CORE Distributive Studies courses are designed to ensure that you will take a look at several different academic disciplines and the way they create and analyze knowledge about the world. A faculty and student committee approved this CORE Distributive Studies course because it will introduce you to ideas and issues that are central to a major intellectual discipline and because it promises to involve you actively in the learning process. Please take advantage of the opportunities this course offers you.

This course counts for *non-lab* science CORE credit. ASTR101 (General Astronomy) satisfies the CORE requirement for a *lab* physical science course. Note that you cannot get credit for both ASTR100 and ASTR101. Please be sure that you have chosen the correct course.

## Course Expectations

**Attendance:** In order to succeed in this course, I expect you to attend the lectures and discussion sections. This is very important! The material on the homeworks and exams are based upon the material covered in the lectures, the text, and the discussion sections. We find that when grading exams, it is very obvious which lectures you missed. People who attend class inevitably earn better grades. If you have to miss a lecture or section, be sure to check what you missed (ask a friend!) and make sure that you understand what was covered. There will be times during the semester, in both lectures and sections, when we may ask for written responses to questions. Your written answers will count towards your grade in the class.

**Preparation** I expect you to be prepared to work. You will understand the lecture more easily if you preview the reading assignment. A more careful reading is recommended after lecture. You should study your class notes sometime before the next lecture to make sure that everything is clear. I encourage you to ask questions.

**Study Habits** Study wisely and ask for help if you need it. If you just cram the night before the exam, you probably will not do very well. It is better (and easier) if you keep up with the material on a daily basis. If you have questions, please see me or one of the TAs. We are here to help you learn.

# 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. Zeros on multiple homeworks fail to add up in a big way.

ASSIGNMENT	Homeworks	Section	Exam I	Exam II	Final	Total
POINTS	150	150	100	100	200	700

Letter grades will be assigned based upon your cumulative score. Grades for some discussion sections may be adjusted slightly so that the average grade given by each TA is similar. Here is how your grade will be determined from your point total in the class:

Letter Grade	Course Total	Percentage
A	613-700	87.5%-100%
B	525-612	75%-87.5%
C	438-524	62.5%-75%
D	350-437	50%-62.5%
F	0-349	0%-50%

The point scale makes it possible for everyone in the class to do well. For example, if everyone scores above 75% in the course, you would all receive either an A or a B letter grade. I may adjust the number of points required to get a given grade depending on the class averages; however, any adjustment will make it easier to get a given grade, never more difficult. Only letter grades will be issued; there will be no +/-'s awarded.

## Midterm Exams

There will be two in-class examinations which will be held in PHYS 1412 on the dates noted in the [lecture schedule](#). 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.

The [schedule of lectures](#) included in this syllabus shows what material will be covered on each exam. Please bring a pencil and your ID card to each exam (including the final). If for whatever reason, the University is *officially* closed on the exam date, the exam date shifts to the next lecture date. If official closures (e.g, due to snow) before an exam impact the material covered, either the impacted material will be omitted, **or** the exam date may be altered, as deemed appropriate.

## Final Exam

As per University rules, **the final exam for this course will be held on Tuesday, December 15 from 8:00 am to 10:00 am in PHYS 1412.** This final exam is cumulative; it will cover *all* material discussed in this course. However, since the material which comes after the second midterm will not have been covered by the midterm exams (see [Lecture Schedule](#)), the weight on these chapters will be higher than on earlier chapters. The final will include multiple choice, essay, and problem solving questions, greatly resembling a longer version of the midterms.

## Missed Exams

The first rule of missing exams is:

**DON'T**

If you are not able to take an exam due to illness or other legitimate reasons (as outlined in the Academic Info section of the schedule of classes) 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. In the case of the final exam, you must arrange for a make-up final within 48 hours after the scheduled exam, and preferably much sooner as final grades must be submitted shortly after the date of the final.

## Discussion Sections

Your weekly 50-minute discussion sections are an integral part of this course. The sections are run by the TAs, with general guidelines from the professor. They will review lecture material, present problems and material not covered in lecture, and may have their own exercises and quizzes. These sections serve as a forum to enhance your understanding of the course material. Your TAs are an excellent resource - get to know them. Homeworks, Exams, and other work will be returned to you during your discussion section. Please attend all your discussion sections. If for some reason you have to miss a section meeting, you may go to one of the other

section meetings offered by your TA that week if you get permission from him or her to do so.

Be sure to attend the discussion section for which you registered. The only way to switch sections is through the registrar's office; unofficial changes are not allowed.

Section	Discussion Time	Room	TA Name	Office Hours
0101	W..... 1:00pm-1:50pm	CSS 2400	Kenneth Melville	TBA
0102	Th..... 1:00pm-1:50pm	CSS 2400	James Keane	M 2-3pm; W 1-2pm
0103	F..... 9:00am-9:50am	CSS 2400	Cheryle Jacob	M 2-3pm; Th 11am- 12pm
0104	F..... 10:00am- 10:50am	CSS 2400	Cheryle Jacob	M 2-3pm; Th 11am- 12pm
0105	F..... 11:00am- 11:50am	CSS 2400	Kenneth Melville	TBA
0106	F..... 12:00pm- 12:50pm	CSS 2400	Lauren Woolsey	W 1-3pm
0107	F..... 1:00pm-1:50pm	CSS 2400	Lauren Woolsey	W 1-3pm

## Homeworks

There are a total of six homeworks in this course. All homeworks are included with this syllabus and can also be obtained from the [Assignments](#) link from the class website. Please type or write up your assignments neatly. Solutions will be posted on the course web page and discussed in Section.

All homeworks are due in class at **9:30 am** (i.e., at the beginning of class). Homeworks turned in after 9:40 am will be considered late and penalized 20%. After the end of class on the due date, no more homework will be accepted. If for some reason you cannot turn the homework in person, you should ask a friend to turn it in for you. If you experience a valid emergency, you must write me an email or leave me a voice mail message **before the due date** telling me why you will be late. In this case, you must secure a valid written excuse and arrange with me to

have the homework turned in to me as soon as possible and, in any event, absolutely no later than the beginning of the next lecture.

If for whatever reason, the University is *officially* closed on the due date, the due date shifts to the next lecture date.

Although you may discuss the homework problems with your friends, the final writeup *must be in your own words*. Copying from a friend's homework, copying from a book, or allowing a friend to copy your homework is academic dishonesty (see [Academic Integrity](#) below) and will not be tolerated in this class. Moreover, it is remarkably easy to spot this form of cheating, so expect to be caught if you try it. The penalty is quite severe (again, see [Academic Integrity](#)) If you consult a reference other than the course text, please acknowledge it in your homework - *this includes websites!*

## Extra Credit

There will be no extra credit papers. The following are the *only* ways to earn extra credit in this class:

- Do the Extra Credit questions on each homework assignment.
- Attend class: I may ask questions or give assignments worth bonus points.

Do **not** fall behind then come asking for extra credit assignments at the end of the semester. This won't happen.

## Open House

The [astronomy department](#) hosts an [open house](#) on the 5th and 20th of each month at the university observatory which is located just off campus on Metzert Road. The open house includes a speaker talking about some aspect of astronomy. Following this short talk, there is public viewing of the heavens with the observatory's telescopes (*weather permitting*). This is your best opportunity to look through a real telescope, which I encourage you to take advantage of.

## Electronic Resources

The World Wide Web is a very useful resource that we will make use of in this class. All students should obtain a computer account, which will include email and internet access. If you do not already have one, get a WAM account. (This can be done in CSS 1400, one floor down from your section class room.) The webpage for this course is

It will contain links to course information (including the contents of this syllabus), supplementary readings, and interactive programs to make ASTR100 fun and to help you learn. In addition, this site is also a gateway to many other astronomy links, including the publisher's website for the book and other sites with up-to-date astronomical images that are made available to the public from telescopes in space and on the ground.

## Course Evaluation

It is very important to get your feedback about the course. This allows us to improve the course for future students. Moreover, if you supply evaluations, it grants you access to the evaluations provided by other students - a very useful resource in planning your future schedule.

An announcement will be made in class when courses are open for evaluation late in the semester.

## Special Circumstances

Students with a documented disability should let me know as soon as possible (preferably on the first day of class) so that appropriate accommodations can be made.

## Academic Integrity

The academic community at the University abides by a Code of Academic Integrity. Acts of academic dishonesty include cheating, fabrication, facilitating academic dishonesty, and plagiarism. Activities such as cheating on exams or quizzes, copying homework from a friend or book, allowing your homework or paper to be copied, and submitting forged excuses for absences from exams are violations of this code. If we suspect that an incident of academic dishonesty has occurred, we will turn the case over to the Student Honor Council to investigate and resolve. If the suspected party is judged 'responsible' for the act(s) of academic dishonesty, the normal sanction is a course grade of 'XF' which denotes failure due to academic dishonesty. This grade is recorded onto the student's academic transcript. The Code of Academic Integrity can be found in the Academic Info section of the Schedule of Classes and is printed in full in the Undergraduate Catalog. Please refer to this Code if you have further questions about what is construed as academic dishonesty. **This is serious.**



# ASTR100 LECTURE SCHEDULE

Lecture Date	Lecture Topic	Reading &c.
Tu. Sep. 1	Introduction; The Cosmic Scale	Chapter 1; Appendix C
Th. Sep. 3	The Scientific Method	Chapter 3
Tu. Sep. 8	Seasons and the Appearance of the Sky	Chapter 2
Th. Sep. 10	Lunar Phases & Eclipses	Chapters 2
Tu. Sep. 15	Competing Cosmologies	Chapter 3; HW#1 DUE
Th. Sep. 17	Kepler's Laws	Chapter 3
Tu. Sep. 22	Conservation Laws and The Laws of Motion	Chapter 4
Th. Sep. 24	The Terrestrial Planets: Geology I	Chapter 7
Tu. Sep. 29	The Terrestrial Planets: Geology II	Chapter 7; HW#2 DUE
Th. Oct. 1	<b>EXAM I</b>	Chapters 1-4, 7
Tu. Oct. 6	The Terrestrial Planets: Atmospheres	Chapter 7
Th. Oct. 8	The Jovian Planets	Chapter 8
Tu. Oct. 13	Moons, Asteroids, & Comets	Chapter 9
Th. Oct. 15	Formation of the Solar System	Chapter 6; HW#3 DUE
Tu. Oct. 20	Light: Electromagnetic Radiation	Chapter 5
Th. Oct. 22	Spectra and Telescopes; Extrasolar Planets	Chapter 5
Tu. Oct. 27	The Sun as a Star	Chapter 10
Th. Oct. 29	The Properties of Stars	Chapter 11
Tu. Nov. 3	Nuclear Fire	Chapter 10, 12; HW#4 DUE
Th. Nov. 5	<b>EXAM II</b>	Chapters 5-11
Tu. Nov. 10	Stellar Evolution: low mass stars	Chapter 12
Th. Nov. 12	Stellar Evolution: high mass stars	Chapter 12
Tu. Nov. 17	End States: White Dwarfs & Black Holes	Chapter 13
Th. Nov. 19	The Milky Way	Chapter 14; HW#5 DUE
Tu. Nov. 24	Galaxies	Chapter 15
Th. Nov. 26	THANKSGIVING	Cookbook
Tu. Dec. 1	Expansion of the Universe; Monsters in the Sky	Chapter 15
Th. Dec. 3	Cosmology - the fun stuff	Chapter 17
Tu. Dec. 8	Cosmology - the goofy stuff	Chapter 16
Th. Dec. 10	Life, the Universe, and Everything	Chapter 18; HW#6 DUE
Tu. Dec. 15	<b>FINAL EXAM</b> (8am-10am)	All of the above



# ASTR 100 (McGaugh)

## HOMEWORK ASSIGNMENTS

The homework assignments for the entire semester are given here. Problems in the boxes refer to problems from the text, *The Essential Cosmic Perspective* (5th Edition). It is important that you use the correct edition of the textbook. Extra credit problems are included below the box.

All homeworks are due at the *beginning* of lecture on the date specified.

Homeworks are late (and suffer a 20% penalty) after I remove the homework tray a few minutes into lecture.

Always put your name and section number at the top of your homework!

Be sure to type or write neatly - we can not give credit for things we can not read.

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### Homework #1 (25 Points) Due Tuesday Sep. 15

Chapter	Problems
Chapter 1	25, 46
Chapter 2	23, 29, 33

Extra Credit (2 Points): Ch. 2, #46

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### Homework #2 (25 Points) Due Tuesday Sep. 29

Chapter 3	39, 41
Chapter 4	34, 35, 47

Extra Credit (2 Points): Ch. 4, #48

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### Homework #3 (25 Points) Due Thursday Oct. 15

Chapter	Problems
Chapter 7	40, 58
Chapter 8	27, 28
Chapter 9	17

Extra Credit (2 Points): Ch. 9, #46

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## Homework #4 (25 Points) Due Tuesday Nov. 3

Chapter	Problems
Chapter 5	50, 52
Chapter 6	36, 57
Chapter 10	47

Extra Credit (2 Points): Ch. 10, #51

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## Homework #5 (25 Points) Due Thursday Nov. 19

Chapter	Problems
Chapter 11	29, 31
Chapter 12	22, 26
Chapter 13	25

Extra Credit (2 Points): Ch. 12, #46

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## Homework #6 (25 Points) Due Thursday Dec. 10

Chapter	Problems
Chapter 15	36, 59
Chapter 16	33
Chapter 17	30
Chapter 18	47, 48

Extra Credit (2 Points): Ch 16, #49

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