

# ASTR2050 Introductory Astronomy & Astrophysics Spring 2005

Welcome to our introduction to astronomy! We will explore lots of neat things in the sky and try to understand why they look the way they do.

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Office Hours: Wednesday 1-3pm *or by appointment*

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Office Hours: Wed&Thu 3-4pm *or by appointment*

**STUDIO TA:** Miranda Nordhaus email: [nordhm@rpi.edu](mailto:nordhm@rpi.edu)

**WEB PAGE:** <http://www.rpi.edu/dept/phys/Courses/ASTR2050>

**LECTURES:** Tuesdays Low 4050 10:00-10:50 *and* 11:00-11:50

**STUDIOS:** Fridays J-Rowl 2C25 10:00-11:50

**TEXTBOOK:** Marc L. Kutner *Astronomy: A Physical Perspective*  
Second Edition, Cambridge (2003)  
Web site <http://astronomyaphysicalperspective.com/>

I've ordered the paperback version of the textbook, and the bookstore has it in stock now. A hard cover version is also available, and you can purchase one online if you like, but it costs about twice as much as the paperback. Nevertheless, it is still expensive, and I apologize for that. However it seems to be a good book, using photos and color graphics, while still clearly describing the physical principles behind astronomical phenomena.

## GRADING POLICY

Grades will be determined as follows:

Three mid term exams	3×10%
Final exam ( <i>not</i> optional)	30%
Homework assignments	20%
Studio exercises	20%

where the cutoffs for *A*, *B*, *C*, and *D* are 90, 80, 70, and 60 respectively.

All exam grades will be scaled up (if necessary) so that the class average is approximately 75. I believe the curve makes it unfair to borderline students if the final is optional, so everyone must take the exam. Homework and studio exercises will be graded coarsely on a four-grade scale, corresponding to 100 (outstanding), 80 (good), or 50 (for some work), with no credit given for little or no work. I may make small adjustments to the overall grading scheme if there are special circumstances.

*Academic Integrity Statement:* Don't copy someone else's homework, and don't cheat on exams. If I suspect you of either, I will ask for an explanation. If your explanation is unsatisfactory, you will be given a grade of zero and reported to the Dean of Students.

## COURSE FORMAT

This is a “semi-studio” course. All new material will be introduced in the two weekly lectures, both on Tuesday. Sometimes the two lectures will be combined into a single  $\approx 90$  minute lecture if the material is logically connected. The Friday studio session will be used for in-class exercises and general and individual discussion about the material. Please come to class prepared, especially the studios.

All exams are open-book and open-notes. You should also bring a calculator. If preparing a crib sheet helps you study, I encourage you to make one and bring it with you.

Homework assignments are listed on the course outline. They refer to chapter and problem number in Kutner. For example, “2,8,13,16,18” means problems (*not* questions) 2, 8, 13, 16, and 18 in Chapter 2.

All homework is due at the start of class, on Tuesdays at 10am, unless otherwise noted. I cannot accept late homeworks without discussing it with you ahead of time. I urge you to review the homework problems the week before they are due so you can ask questions during the studio.

Studio exercises will be handed in at the end of the session, unless prior arrangements are made with me.

I will keep lecture notes and other materials posted on the course web page. An electronic mailing list is established with the address [ASTR2050-L@lists.rpi.edu](mailto:ASTR2050-L@lists.rpi.edu) for announcements and other information. Anyone may use it to communicate with the entire class.

## SPECIAL NOTICES

- Studio exercises more or less follow the material covered in lecture, but not always. In any case, they are meant to extend material we cover in lecture and homework.
- I’ve scheduled no studio exercises on the Friday before Spring break. If necessary, that class time can be used to makeup studio exercises which you may have missed.
- Read the studio exercise before coming to class. In some cases you may need to bring some special materials with you, like a ruler or a pair of scissors. You may also need data or images off the web.
- In some cases two studio exercises may be listed. You will do only one of these in class, but you should review the other exercise when you study for the exams.
- I want to give you plenty of time to work the mid term exams, so I’ve scheduled them for two hours on Monday evenings. The time is arbitrary, however, and **if there is a conflict for many of you, please let me know.**
- Class or studio attendance is not mandatory. If you would like to do the studio exercises ahead of time and hand them in, that is okay with me. You may also do the exercises early, and use the studio time to work on homework or ask questions.

Course Outline		April 27, 2005	ASTR2050 "Intro Astronomy & Astrophysics"		Spring 2005	
Lectures			Homework		Studio	
Date	Topic	Kutner	Problems	Due	Date	Topic
18 Jan 10am 11am	Welcome and overview Light; Blackbody radiation	Chap.1 2.1-2.4	2.8,13,16,18	25 Jan	21 Jan	Mass of the Sun
25 Jan 10am 11am	Color, magnitude, distance Spectral lines; HR diagrams	2.5-2.7 Chap.3	2.1,20 3.1,10,17	1 Feb	28 Jan	Blackbody radiation or Spectral lines
1 Feb 10am	Telescopes	Chap.4	4.2,6,11,22,29	8 Feb	4 Feb	Make a telescope
8 Feb 10am 11am	Binary stars; Stellar masses The Sun: A typical star	Chap.5 Chap.6	5.8,20 6.2,11	15 Feb	11 Feb	Binary star simulation
<b>Exam #1 (Through 8 Feb, Chapter 6)</b>						
15 Feb 10am	The main sequence	Chap.9	9.1,4,9,11,12,13	1 Mar	18 Feb	HR Diagram of the Pleiades
22 Feb 10am	<i>No class</i>		-	-	25 Feb	Solar System scale model
1 Mar 10am 11am	Stellar evolution; Cepheids Planetary nebulae; Supernovae	10.1,10.2 10.3,11.1	10.1,6,7 11.1	8 Mar	4 Mar	The distance to M81
8 Mar 10am 11am	White dwarfs and neutron stars Black holes	10.4,11.2-11.4 Chap.8;11.5	10.10,13 8.6,8; 11.3,5,7	22 Mar	11 Mar	<i>Makeups</i>
<i>March 15-19 No Classes (Spring Break)</i>						
22 Mar 10am 11am	Close binaries; SS433 Clusters of stars	Chap.12 Chap.13	12.8,9 13.1,14	29 Mar	25 Mar	The model of SS433
<b>Exam #2 (Through 22 Mar, Chapter 13)</b>						
29 Mar 10am	The interstellar medium	Chap.14	14.1,4,16,21	5 Apr	1 Apr	The Coalsack Nebula
5 Apr 10am	Star formation	Chap.15	15.4,8,9,13	12 Apr	8 Apr	The Ring Nebula
12 Apr 10am 11am	The Milky Way galaxy Normal galaxies	Chap.16 Chap.17	16.11,14 17.3,7	19 Apr	15 Apr	The Hubble Constant
19 Apr 10am	Active galaxies and quasars	Chap.19	18.8;19.4	26 Apr	22 Apr	The center of M87
26 Apr 10am	<b>Exam #3 (Through 19 Apr, Chapter 19)</b>				29 Apr	Primordial nucleosynthesis
3 May 10am	Cosmology: The Big Bang	Chaps.20,21	20.12,17 21.4,7,8	"RbNR"	6 May	<i>No class</i>
<b>Final Exam</b>						
<b>Wednesday 11 May 3-6pm</b>						<b>Troy 2018</b>