

**ASTRONOMY 161 – INTRODUCTION TO SOLAR SYSTEM ASTRONOMY  
COURSE INFORMATION  
AUTUMN QUARTER 2011**

Lecturer:

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TA:

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Classroom:

Class Hours:

**Textbook:** *Astronomy Today*, 7<sup>th</sup> edition, by Chaisson and McMillan. This will be the textbook for both Astron 161 and Astron 162.

**Intended Audience for this Course:**

This course is intended primarily for non-science majors who wish to meet a GEC natural science requirement or who are just generally interested in modern astronomy.

- *Arts and Sciences students:* This course will count towards your GE natural science-sequence requirement *only* if you are seeking a Bachelor of Arts degree.
- *Natural science majors:* You may wish to take a calculus-based introductory sequence, Astron 291–292, which is offered in the Autumn and Winter quarters.
- *Honors students:* You may wish to take the honors courses Astron H161–H162. The sections are much smaller and are discussion-oriented rather than lecture format.

**Astron 161 in the General Education Curriculum (GEC)**

Astron 161 and 162 may count towards fulfilling the Natural Science requirement in the Physical Science category of the GEC curriculum. The goals of the Natural Science coursework foster students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world. The expected learning outcomes for GEC Natural Sciences courses are as follows:

1. Students understand the basic facts, principles, theories, and methods of modern science.

2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

The specific learning goals and objectives for Astron 161 (and how they map into the GEC expected outcomes) are:

- Understanding how the Copernican view of the Solar System was arrived at, starting with early Greek astronomy (addresses outcomes 1, 2 and 4)
- Understanding how Galileo's use of the telescope as a scientific instrument revolutionized astronomy and humankind's approach to physical science in general (addresses outcomes 2, 3, and 4)
- Understanding gravitation in two-body systems, the Solar System, and large systems of stars (addresses objective 1)
- Understanding the fundamental nature of light and how it interacts with matter (addresses objective 1)
- Understanding how modern telescopes work across the electromagnetic spectrum and the impact of large new telescopes and telescopes in space (addresses outcomes 2, 3, and 4)
- Understanding the nature of objects in the Solar System and how these lead to conclusions about how the Solar System was formed (addresses outcomes 1, 2, 3, and 4)

### **Course Prerequisites:**

The prerequisites for this course are minimal. You must have completed Math 075, 076, or 102, or be placed at least at level R in the Math Placement test. What this means in practice is that occasional algebraic equations with simple trigonometric functions (sines, cosines, and tangents) will be used.

### **Grades, Exams, and Other Unpleasantness:**

*Evaluation:*

Grades will be based almost entirely on performance on examinations.

- *Regular examinations:* There will be five examinations given during the regularly scheduled class period during the quarter. The total value of all the regular exams will be 70% of the final grade.
- *Final exam:* There will be a comprehensive final examination that will count for 30% of your final grade.

In general, there will be *no* make-up examinations (see below), so you are allowed to miss *one and only one* of the five regular examinations during the semester; if you take all four examinations, your lowest score will be dropped and your grade will be based on

your four best examination scores. Each of the three regular examinations will count 17.5% towards your final grade (i.e., the sum of your three best examinations counts for 70% of your final grade). The final examination counts for the remaining 30%.

*Grading Scale:*

Grades will be on a curve, although you must have an average of at least 45.00% to pass the course, regardless of how the grades are distributed. A sample grading scale is given on the class website.

*Format of the Examinations:*

The exams will be multiple-choice format, although the professor reserves the right to make (announced) changes if it is deemed to be appropriate. Please note that you will be required to show a picture ID at each exam (see section below on “Academic Misconduct”). Also, you are expected to keep the original copies of the regular exams: without these you will be unable to check your exam results. These are also useful for future study. Also, if grading problems occur, the professor may request the original copy of your examination; failure to produce it if requested *could* result in you receiving a zero for that examination if the problem cannot be resolved.

- *Regular Examinations:* Tests will be given approximately every two weeks. The tests will take the entire class period. Tests are scheduled for (1) Friday, 7 October, (2) Friday, 21 October, (3) Friday, 4 November, (4) Friday, 18 November, and (5) Thursday, 1 December. As described above, you may miss or drop one examination; if you take all five exams, only your four best scores will count towards your grade.
- *Final Examination:* A comprehensive two-hour final examination will be given on TBD. The final examination, which is mandatory, will account for 30% of the course grade.

*Make-up Examinations and Scheduled Absences:*

Since you are allowed to miss or drop one examination, in general make-up examinations will not be given. Make-up examinations will be allowed for a second missed exam only under truly extraordinary circumstances only (as determined by the professor), e.g., serious illness (as verified by a physician), or personal tragedy. The format of make-up tests will be at the discretion of the professor (i.e., they may not necessarily be multiple-choice). Please also understand that the professor will be decidedly unsympathetic to the following oft-heard line of argument: “I decided that I'd drop the second test, and then I got sick so I missed the fourth test, so can I take a make-up?” The answer is “no, you may not.” It is not for you to decide to drop a test, it will be more likely determined by microbes or what insurance companies call an “Act of God.” Do *not* plan to miss an exam.

If an examination conflicts with an approved University function (e.g., if you are a member of a varsity athletic team or *TBDBITL* and are required to leave town), you may

take an exam earlier than the scheduled date, provided that you obtain permission from the professor at least a week in advance.

If you should miss the final examination, your course grade will be recorded as a failure unless you contact the professor (by phone, if necessary) before 9 a.m. on Wednesday, 7 December and arrange to take the final at the beginning of Winter Quarter — in this case you will receive a grade of incomplete, which will revert to a failing grade if you do not make up the examination as arranged.

**Additional Information:**

*Roof Nights:*

Roof nights constitute what might be called a casual laboratory for this course — the telescopes on the roof of Smith Lab will be opened for you to enjoy the splendor of the Universe (or at least the inner Solar System) firsthand. These will take place on Wednesday evenings, weather permitting (optical telescopes can't see through clouds) on dates to be announced

The Roof Night schedule can be accessed through the class webpage.

*Review Sessions:*

If there is sufficient interest, we will schedule late-afternoon or evening review sessions prior to the regular exams.

**Academic Misconduct:**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct ([http://studentaffairs.osu.edu/info\\_for\\_students/csc.asp](http://studentaffairs.osu.edu/info_for_students/csc.asp)).

Evidence that academic misconduct has occurred will be turned over to the Committee on Academic Misconduct for disposition.

**Students with Disabilities:**

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

**IMPORTANT: IT IS THE RESPONSIBILITY OF THE STUDENT TO BE FAMILIAR WITH ALL OF THE INFORMATION CONTAINED HERE. STUDENTS ARE ALSO RESPONSIBLE FOR ANY CORRECTIONS OR ADDENDA ANNOUNCED IN CLASS.**

**Astronomy 161**  
**Introduction to Solar System Astronomy**

Week	Date	Day	Topic	Text	
1	21-Sep	W	Introduction	Chapter 1	
	22-Sep	R			
	23-Sep	F	The Sky		
2	26-Sep	M			
	27-Sep	T	The Copernican Revolution	Chapter 2	
	28-Sep	W			
	29-Sep	R	Galileo: The First Modern Scientist		
3	30-Sep	F			
	3-Oct	M	Newton's Laws and Gravitation		
	4-Oct	T	Orbits		
	5-Oct	W			
	6-Oct	R	Radiation	Chapter 3	
4	7-Oct	F	<b>First Examination</b>		
	10-Oct	M			
	11-Oct	T	Atoms and Spectroscopy	Chapter 4	
	12-Oct	W			
	13-Oct	R			
5	14-Oct	F	Telescopes	Chapter 5	
	17-Oct	M			
	18-Oct	T			
	19-Oct	W			
	20-Oct	R	Overview of the Solar System	Chapter 6	
	21-Oct	F	<b>Second Examination</b>		
6	24-Oct	M	Origin of the Solar System		
	25-Oct	T			
	26-Oct	W			
	27-Oct	R	The Earth as a Planet	Chapter 7	
	28-Oct	F			
	7	31-Oct	M		
1-Nov		T	The Moon	Chapter 8	
2-Nov		W			
3-Nov		R	Mercury		
4-Nov		F	<b>Third Examination</b>		
8		7-Nov	M	Venus	Chapter 9
		8-Nov	T		
	9-Nov	W	Mars	Chapter 10	
	10-Nov	R			
9	11-Nov	F	Veteran's Day - NO CLASS		
	14-Nov	M	The Jovian Planets	Chapters 11-13	
	15-Nov	T			
	16-Nov	W			
	17-Nov	R	Planetary Rings	Chapter 14	
10	18-Nov	F	<b>Fourth Examination</b>		
	21-Nov	M	Asteroids and Meteors		
	22-Nov	T	Icy Worlds of the Outer Solar System		
	23-Nov	W	Comets		
	24-Nov	R	Thanksgiving - NO CLASS		
	25-Nov	F	NO CLASS		
11	28-Nov	M	Comparative Planetology	Chapter 15	
	29-Nov	T	Exoplanets: Planets Around Other Stars		
	30-Nov	W	Are We Alone? Life in the Universe	Chapter 28	
	1-Dec	R	<b>Fifth Examination</b>		
	2-Dec	F	Review Session		
12	5-Dec	M	<b>Final Examination</b>		