

# Introduction to Astronomy II Syllabus

AST112                      Instructor: David Fredericksen

Office: PS 108                      Phone: 623-845-3594

e-mail: david.fredericksen@gcmail.maricopa.edu

Office Hours MW 11:00 - 11:50am TTh 9 - 10 am F 7:00 - 7:50am

## COURSE DESCRIPTION:

This course provides an introduction to astronomy for the non-science major. The subject matter includes: history of astronomy, properties of light, instruments, the solar system and nearby stars. The course satisfies the general education science requirement.

## Prerequisites:

The only course prerequisite is completion of Introductory Algebra (MAT 092) or higher math course. Introductory Algebra is similar to a one-year high school algebra course.

## EXAMINATIONS:

EXAM 1	Sec. 3, 4, 5	Sept 14
EXAM 2	Sec. 16, 17, 18	Oct 5
EXAM3	Sec. 19 ,20, 21, 22	Oct 26
EXAM 4	Sec. 23, 24, 25	Nov 16
EXAM 5	Sec. 26, 28	Dec 9

The final exam week is Dec 14 - 17

The exam schedule is tentative.

## Syllabus Changes:

The information contained in this syllabus is subject to change. Any changes to the syllabus will be announced in class. You are responsible for any changes to the syllabus announced in class whether you are in attendance or not.

## ATTENDANCE POLICY

Attendance will be taken daily. When a student has accumulated unexcused absences in excess of three (3) periods, the instructor **MAY** file a withdrawal form for that student. Only students enrolled in the class are allowed to attend class. For emergency childcare during class time, call "Child Care Services" at 623-244-2678 to find certified childcare centers near the campus.

Please be in class on time. It is very distracting with all of the late comers. If tardiness becomes a problem, the door to the room will be locked at class time.

## TEXT:

Lecture Tutorials for Introductory Astronomy, Adams, Prather, and Slater; Mastering Astronomy CD

## COURSE COMPETENCIES

1. Apply the scientific method and other critical thinking models to astronomical phenomena for hypotheses development, experimental design, data acquisition, and data analysis.
2. Explain the application of fundamental physical principles to various astronomical phenomena.
3. Describe in terms of energy, wavelength, and frequency the various portions of the electromagnetic spectrum.
4. Explain what information can be obtained by spectral analysis.
5. Describe the physical properties of the Sun.
6. Explain various techniques used to provide estimates of some fundamental properties of stars.
7. Explain binary star systems and star clusters.
8. Discuss the significance of the Hertzsprung-Russell Diagram.
9. Describe the composition of the interstellar medium and its effects on radiation.
10. List the possible steps in the formation of stars.
11. Describe the birth, life, and death of both low-mass stars and high-mass stars.
12. Describe the final remnants of both low-mass stars and high-mass stars.
13. Describe the contents and structure of the Milky Way Galaxy.
14. Describe the classification and distribution of galaxies.
15. Discuss the significance of Hubble's Law.
16. Describe the possible models which account for active galaxies.
17. Describe current cosmological models and their implications on the past and the future.
18. Discuss the probability of extraterrestrial intelligence and the possibility of extraterrestrial communication

## AUDIO TAPING

Students may tape lectures if they desire. However, since much of our discussion will focus on examples and demonstrations, taking notes is highly recommended.

## DISABILITY STATEMENT

If you have a disability that may have an impact on your work in this class and for which you may require accommodations, please notify the Disability Services and Resource Office on the GCC campus located in room SPS 31. Their phone number is 623.845.3080.

## EMAIL/PALLETTE ACCOUNTS

Students are welcome to correspond with the instructor using the email address listed near the top of the syllabus. Students are also encouraged to activate their palette accounts, which allows access to standard applications, email and storage space on the college server. Brochures are available in both High Tech Centers explaining the activation procedures.

## DICIPLINARY ACTION

Disciplinary actions may be imposed on students for misconduct or violation of law and/or college rules and policies. Students may be subject to the following: temporary exclusion, disciplinary probation, suspension, or expulsion from the class. The policies followed in disciplinary actions are outlined in the official Student Handbook published by GCC.

## WITHDRAWAL POLICY

A student may withdraw from the course by submitting a withdrawal form to the Admissions Office. It is the responsibility of the student to contact the instructor about the possibility of a withdrawal after the 7<sup>th</sup> week of school. All withdrawals must be done prior to the last 2 regular weeks of class.

## FOOD AND DRINK

School policy prohibits food and drink in the classrooms. The only exception is **water** in closed containers, e.g. sports bottles or small bottled water containers.

## CELL PHONES AND PAGERS

The audio alert of cell phones and pagers must be turned **off** in the classroom. The use of cell phones is not allowed inside the classroom when class is in session.

## MAGAZINE ARTICLE SUMMARIES 80 POINTS OR 11% OF YOUR GRADE

Each student will be expected to prepare summaries of 10 magazine or journal articles relating to an APPROVED topic. This assignment is worth 80 points. The topic **MUST** be covered in the course. The magazine articles must be at least one full page in length. At least 3 different magazines must be used (e.g. 1 articles from issues of *Astronomy*, 1 articles from issues of *Sky & Telescope*, and 8 articles from *Nature*.) You must pick **1 (one) topic** for you articles.

The article summary must include the magazine reference and the name of the student at the top of the page. If the magazine article was found on the Internet, then the Internet address must be

included beneath the reference. This is followed by a **one-page** summary (e.g. double spaced, typed) of the article. The font size must be no greater than 14 points. A cover form, supplied by the instructor, must be attached to the front of the set of summaries. NOTE: do **NOT** turn in copies of the articles, just the summaries.

Magazines commonly found in college and public libraries or network databases, which could be used, include the following. These are only examples.

<i>Astronomy</i>	<i>Nature</i>	<i>Final Frontier</i>
<i>Discover</i>	<i>Science</i>	<i>Sky &amp; Telescope</i>
<i>Earth &amp; Space</i>	<i>Scientific American</i>	<i>National Geographic</i>

The following example shows the format to be used for the summaries:

Newton, Jack Viewing a Solar Eclipse <i>Sky &amp; Telescope</i> February 2004, pp. 45-48 www.e-magazine.com/skyandtelescope	NOTE: The reference and name portions at the top are <u>single spaced</u> .	Jane Q. Doe AST 111
This article describes various ways to safely observe a solar eclipse.		
The author also reviews different tests made on a variety of solar filters ....		

Deadlines for the magazine article summaries:

Clear topic with instructor by Sept 4, 2009.

Turn in summaries by Nov 25, 2009.

Eight points a day will be deducted for late magazine article summaries.

Grading for the magazine article summaries:

Cover Form	10 points
Neatness	20 points
Summaries	50 points

### FIELD TRIP / PROJECT 80 POINTS OR 11% OF YOUR GRADE

Each student will be expected to complete either a field trip **OR** a project during the semester. This assignment is worth 80 points. Both the field trip and the project must be approved by the instructor.

## FIELD TRIP

Plan a field trip to some astronomically interesting facility. Clear the trip with the instructor. Visit the facility and write a summary of your visit and turn it in to your instructor.

For **out-of-town field trips** (e.g. Lowell, Kitt Peak, etc.) the summary should be at least one page in length and include a description of (a) the site, (b) the equipment and facilities available at the site, (c) the type of work or research done and (d) your general impression of the facility.

For **in-town field trips** (e.g. Arizona Science Center, Challenger Learning Center) the summary must be at least one page in length and **must** include a description of the planetarium show and the physics/astronomy exhibits.

Attach some type of **evidence** (i.e. a receipt **or** a photograph of you in front of the facility **or** a "stamp" from someone at the facility on a brochure) to prove you actually visited the facility. **NO EVIDENCE, NO POINTS!!** A cover form, supplied by the instructor, must be attached to the front of the report.

## PROJECT

Choose a project that can be completed during the semester session. Clear the project with the instructor.

An example of a project would be to scan a daily newspaper every day during the semester and clip out any articles dealing with astronomy. The articles would be put in a scrapbook form with the name of the newspaper and date at the top of each article.

Other examples of projects include but are not limited to: observational projects, writing computer programs, student produced video, etc. Writing a report **is not** considered a project.

Write a report describing your project and turn it in to the instructor for evaluation. A cover form, supplied by the instructor, must be attached to the front of the report.

Deadlines for the field trip/project:

Clear with the instructor by Sept 4, 2009.

Turn in field trip/project report by Nov 25, 2009.

Eight points a day will be deducted for late reports.

Grading for the field trip/project:

Cover Form	10 points
Neatness	20 points
Report/Summary	50 points

## HOMEWORK 75 POINTS 10%

There will be 1 homework assignment each exam period worth 15 points. The assignments can be turned any time before the exam. The assignments will come from Mastering Astronomy Online. Late homework will not be accepted.

## EXAMS 500 points or 68% of the grade

There will be five in-class exams and they will be worth 100 points each. Exams may consist of multiple choice, matching or true-false questions.

Students will be allowed to make up one (1) make-up exam, for full credit, if **PRIOR APPROVAL** is obtained **BEFORE** the scheduled exam date. Make-up exams **MUST** be taken within **TWO DAYS** of the original scheduled date. A 10 point penalty will be assessed for subsequent make-up exams.

**For each exam including the final, students may prepare one 5" x 8" card with notes, formulae, etc. to use during the exam.**

Exam #1: Sections 3, 4, 5

Exam #4: Sections 23, 24, 25

Exam #2: Sections 16, 17, 18

Exam #5: Sections 26, 28

Exam #3: Sections 19, 20, 21, 22

## EXTRA CREDIT

You will be able to earn extra credit in the class. The maximum that you will be allowed to earn is 40 points which is 5% of the grade.

## EVALUATION PROCEDURE

5 Exams @ 100 each	500 points
Magazine Article Summaries	80 points
Field Trip / Project	80 points
Homework	75 points
Total	735 points

## FINAL GRADE

The final grade will be based on the total points accumulated by each student. Students must complete **either** the magazine article summaries or the field trip/project to earn a grade of B or better. If you want to earn an A you must do **both** the summaries and field trip/project.

The approximate guidelines for the grades are:

A = 658 - 735 points

B = 584 - 657 points

C = 511 - 583 points

D = 437 - 510 points

F = 436 points and below