

Northern Arizona University
College of Engineering, Forestry, & Natural Sciences
Department of Physics & Astronomy
Astronomy 180
Introduction to Astronomy
Spring 2009

Professor: Dr. Stephen C. Tegler, Room 307/308, Physical Sciences Building 19.
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Office Hours: TU,TH 02:15 – 03:15 p.m. and W 03:00 – 04:00 p.m., Room 307/308 of the Physical Sciences Building, or by appointment, please call 523-9382.

Course Particulars: This is a 3 credit hour course. The meeting times are TU & TH, 12:45 – 2:00 p.m. in Room 130 of the Wettaw Building. The final exam is scheduled for Tuesday, May 5, 2009, from 12:30 – 2:30 p.m.

Course Pre-requisites: None. However, since this is a university-level course, I will assume a working knowledge of high school algebra and geometry.

Course Description: This course is an overview of modern astronomy. We will study the motions of celestial objects, the solar system, stars, and galaxies. We will explore not only our geometric place in the Universe, but also our evolutionary place. The thematic focus of the course is technology and its impact, since we will be examining how our changing technology over the centuries has affected our view of the Universe. This liberal studies course meets a three-hour science requirement if taken by itself, and meets the lab science requirement if the separate lab, AST 181, is also taken. This course will address several of the liberal studies essential skills. Our work will focus on the logic of scientific inquiry, both quantitative and spatial reasoning, and both critical reading and thinking.

Course Objectives: After successful completion of this course, you will be able to:

(a) Know enough basic facts in astronomy, and have sufficiently developed your ability to apply the logic of scientific inquiry, to be able to *critically* read an article on astronomy in the newspaper.

(b) Use your knowledge of the solar system and spatial reasoning to know where to look in the sky to find the Moon and planets, depending on the phase or configuration.

(c) Use quantitative reasoning to be able to solve various problems, and be able to interpret the results.

(d) Use astronomical concepts and critical thinking skills to describe, using specific examples, not only our geometric place in the universe but also our evolutionary place, and how our understanding of that place has changed with changing technology.

Course Structure: The structure can be described as a “participatory lecture”. Class is a time to think, not a time to sit back and wait for information to be poured into you.

Required Textbook and Enhanced WebAssign Access Card: We will use the tenth edition of the introductory astronomy textbook entitled *Horizons* by Michael Seeds. In addition, you will need an access card with an access code for the online homework and examination program entitled *Enhanced WebAssign*.

You have three choices to get these two items: (1) purchase a new textbook packaged with a free access card (ISBN 0495481696) at the bookstore or online; (2) buy a used book and then buy an access card at the bookstore or online; (3) purchase an e-book of *Horizons* and an access card.

Reading Assignments: The reading assignments are required. They are not a substitute for lectures. The lectures supplement the reading assignments.

Assessment: We will have weekly homework assignments and two 90-minute examinations using Enhanced WebAssign, an online homework and examination program provided by the publisher of our textbook. The Enhanced WebAssign questions are primarily multiple-choice. The homework and 90-minute examinations will be open notes and open book. Each examination will have a strict 90-minute time limit. You will have a 24-hour period to complete each exam. It is important to be well prepared and study for each exam. If you are not well prepared for an exam, you could spend most of your time looking for answers in your notes and book and not finish an exam. There will be no class on examination days. In addition, we will have an in-class, comprehensive, closed-book, closed-notes, multiple choice, final examination during final exam week.

Grading System: Your semester grade will be weighted approximately as follows:

Weekly WebAssign Homework:	~35%
Two WebAssign Examinations	~30%
Comprehensive Final Exam	~35%

Below is an approximate grading scale:

>90%	A
>80%	B
>70%	C
>60%	D

Makeup Examinations: You must obtain permission in advance of the regularly scheduled examination in order to take a make-up examination. Make up examinations will consist of essay and short answer questions, not multiple-choice questions.

Makeup Homework: There will be no makeup homework assignments. There will be one extra credit homework assignment.

Attendance: I expect you to come to class every day. However, there will be no formal mechanism for taking roll. In order to succeed, you must come to class.

Statement on Dishonesty: I will not tolerate dishonesty. Anyone caught cheating will fail the course.

Departmental and University Policies: Please see class webpage.

Course Outline:

- Ch. 1 - Scale of the Cosmos
- Ch. 2 - The Sky
- Ch. 3 - Cycles of the Sky
- Ch. 4 - Origin of Modern Astronomy
- Ch. 5 - Astronomical Tools
- Ch. 6 - Starlight and Atoms

Examination 1

- Ch.8 - Family of Stars
- Ch.9 - Formation and Structure of Stars
- Ch.10 - The Death of Stars
- Ch.11 - Neutron Stars and Black Holes

Examination 2

- Ch. 12 - The Milky Way Galaxy
- Ch. 13 - Galaxies
- Ch. 14 - Galaxies With Active Nuclei
- Ch. 15 - Cosmology In the 21st Century
- Ch. 16 – The Origin of the Solar System

Comprehensive Final Examination

Tips For Success In Ast 180: You will have a highly enjoyable experience in Ast 180 if you: (1) come to every class; (2) complete all reading assignments; (3) complete all the WebAssign homework; and (4) study for WebAssign exams and the final exam.

Twelve Words of Wisdom: Do your own work; Talk to your professor; Learn from your mistakes.