

# ASTR-1020: Astronomy II

## Syllabus — Spring 2009

**Course ID:** ASTR-1020-202,203,204  
**Lecture Times:** T R 2:15 p.m. – 3:35 p.m.  
**Laboratory Times:** T 7:55 p.m. – 9:55 p.m. (Section 202/Lab: James Tittle)  
                                   W 7:55 p.m. – 9:55 p.m. (Section 203/Lab: James Tittle)  
                                   R 7:55 p.m. – 9:55 p.m. (Section 204/Lab: James Tittle)  
**Lecture Location:** Brown Hall, Room 261  
**Lecturer:** Dr. Donald Luttermoser  
**Office Hours:** T R 3:45 p.m. – 5:00 p.m.  
**Office Location:** 280 Brown Hall, **Phone:** 439-7064, **Email:** lutter@etsu.edu  
**Textbook:** *Astronomy Today, 6th Edition* (2007) by Chaisson & McMillan

### Course Outline

<u>Days</u>	<u>Topics</u>	<u>Readings</u>
January 15	Introduction & Needed Tools	Chapter 3
January 20, 22	The Sun: An Introduction to Stellar Astrophysics	Chapter 16
January 27	The Sun (cont.)	Chapter 16
January 29	<b>Mid-Term Exam 1</b>	Chapters 3, 16
February 3, 5	Stellar Properties & The H-R Diagram	Chapters 1.7, 4, 17
February 10	The Interstellar Medium	Chapter 18
February 12	<b>Mid-Term Exam 2</b>	Chapters 1.7, 4, 17, 18
February 17, 19	Stellar Evolution: Birth	Chapter 19
February 24, 26	Stellar Evolution: Mid-Life to Old Age	Chapter 20
March 3	Stellar Pulsation (moved to “Death” section)	Chapter 23.2
March 5	<b>Mid-Term Exam 3</b> (no “Pulsation” questions)	Chapters 19, 20
March 10, 12	<b>Spring Break, No Class</b>	—
March 17, 19	Stellar Evolution: Death	Chapter 21
March 24, 26	Stellar Corpses	Chapter 22
March 31, 2	The Milky Way Galaxy	Chapter 23
April 7	<b>Mid-Term Exam 4</b>	Chapters 21, 22, 23
April 9	Galaxies in the Universe	Chapter 24
April 14, 16	Galaxies (cont.)	Chapter 25
April 21, 23	Cosmology and History of the Universe	Chapters 26, 27
April 28, 30	Life in the Universe	Chapter 28
May 5*	<b>Final (10:30 a.m. – 12:30 a.m.)</b>	all listed

\* — Note: The Final is on Tuesday, May 5th at the time listed above in Brown Hall 261.

To view the *University’s Syllabus Attachment*, go to Web site:

<http://www.etsu.edu/reg/syllabus.htm>.

The web page for this course can be found at:

<http://www.etsu.edu/physics/lutter/courses/ast1020/index.htm>

## Overview

**Astronomy II** represents an exploration of the Universe outside of the solar system. The class notes are designed to follow and elaborate on the course textbook *Astronomy Today*. Lectures will cover both the class notes and the textbook readings listed on the **Course Outline**. Note that from time to time, there will be slide shows, demonstrations, and videos that will be presented during lecture. You may be tested on these, so it would be a good idea to attend each lecture!

The main goal of this course is to demonstrate to you how things in the Universe work through **scientific methodology**. *Mathematics* is the language of astronomy and physics, however, we will not emphasize mathematical problem solving. **However, this does not mean there will be no mathematics in the course!** There will be times when simple formulae describing some physical principle is discussed and simple examples given to demonstrate the given principle. Many of the laboratories will involve the solution to some mathematical problem. As such, ask questions if you don't understand what is being presented in lecture. Your homework will be designed to help you prepare for the Exams — they will not be collected or graded. **Note that Astronomy I is NOT a requirement for this course.** All tools introduced in Astronomy I that are required for this course will be presented during the first week of class.

## Homework

There will be 5 Homework sets assigned during the semester. The total homework score is worth 5% of your course grade. **Homework questions will be posted on the course web page and each student will have to turn in a Scantron sheet in class with their answers by the due date. Homework Scantron sheets are to be purchased by the student at the ETSU Bookstore.** Note that “standard” Scantrons should be purchased for these Homework problems. The “standard” forms should have the number “882” listed as part of either the “Ref #” or “Form #.” Also note that these Homework assignments will be very useful as a Study Guide for the Exams. The following table shows the due dates for each Homework set.

Homework Set	Due Date
#1	Tuesday, January 27, 2009
#2	Tuesday, February 10, 2009
#3	Tuesday, March 3, 2009
#4	Thursday, April 2, 2009
#5	Tuesday, April 28, 2009

## Exams

There will be 4 Mid-Term Exams throughout the semester and a **comprehensive** Final Exam on the dates listed on the syllabus. Each will cover material prior to the exam and be taken during class time (except the Final Exam). Each Mid-Term Exam will have 30 questions and the Final Exam will have 100 questions on it. The questions on the Mid-Term Exams and Final Exam all will be *multiple choice*. You will place your answers on a **Scantron** sheet (passed out in class) to be graded by a scanning machine. As such, you will be required to bring #2 pencils to the exams. Your final grade will be based on your three best Exam scores (15% per exam) and the Final Exam (25%). If you take all 4 Mid-Term Exams, I will drop your lowest score from the grade calculation. Due to this exam policy and the fact that the questions are all multiple choice, **you will not be allowed to use your notes, textbook, or crib cards during the exams.** There will be **no make-up exams given** in this course. Since the lowest Mid-Term Exam score is dropped, you will not be penalized if you miss one of the Mid-Term Exams. Missing more than one Mid-Term Exam, however, will almost certainly result in you failing the course! There will be **no** extra-credit assignments allowed in this class. Each exam will have two additional extra-credit questions based upon the class discussions and videos you will see periodically in class. Calculators will **not** be needed for the exams.

## Laboratories

Depending on the Section for which you signed up, students of Astronomy II are **required** to meet weekly **in the evening** either on Tuesday (§202), Wednesday (§203), or Thursday (§204) in conjunction with the lectures. The instructor for each lab is Mr. James Tittle. We will be sharing lab facilities with Astronomy I. These facilities are the **ETSU Powell Observatory** just south of campus and **Brown Hall Room 264**. Astronomy I and Astronomy II classes will swap each lab location every week — while Astronomy I uses Room 264, Astronomy II will use the ETSU Observatory, then the next week the 2 classes change locations. **Your first lab meeting will take place the 2nd week of the semester (either on January 20, 21, or 22) depending upon the Section) and will meet at the Brown Hall 264 during that week (see the Lab Syllabus for more details).**

**Each student is required to buy the “ASTR-1020 Astronomy II Laboratory Manual” from the bookstore for this course.** At the end of each lab in the lab manual, there is a sheet either entitled *Observing Log* or *Laboratory Report* depending upon whether the lab deals with outdoor or indoor activities, respectively. Raw data taken during the lab should be recorded on these sheets and all questions answered. There is also a *Experiment Summary* section on these log/report sheets, where the student is required to write a paragraph or two summarizing the results of each experiment. **These labs/reports are to be turned in at the end of the laboratory period.** That is, they are to be turned in the same day you do them. **No labs/reports will be accepted late!** Since they are worth 25% of your final grade, it's a good idea to do well on these observing logs and laboratory reports. There will be a grand total of 12 laboratories that you will perform (one of these will be a take-home lab), each worth 10 points. Of these, two will be considered

extra-credit. As such, you can safely miss up to 2 labs and not be penalized in your total lab grade. **Finally, if you turn in less than 8 laboratories, you automatically fail the course independent of your exams scores.** Don't blow off the labs!

## Grading

The grading system will be based by the following criteria:

**Final Grade =**

$$45\% * \left( \frac{\text{Best 3 Mid-Term Exams Total}}{90} \right) + 25\% * \left( \frac{\text{Final Exam}}{100} \right) + 25\% * \left( \frac{\text{Lab Total}}{100} \right) + 5\% * \left( \frac{\text{Homework Total}}{100} \right)$$

The final course grades will be based on the following scale:

<b>B+</b> = 86–87.9%	<b>A</b> = 90% or better	<b>A-</b> = 88–89.9%
<b>C+</b> = 70–72.9%	<b>B</b> = 76–85.9%	<b>B-</b> = 73–75.9%
<b>D+</b> = 56–58.9%	<b>C</b> = 62–69.9%	<b>C-</b> = 59–61.9%
	<b>D</b> = 50–55.9%	
	<b>F</b> = Less than 50%	

Note that a failing grade also will be given if the student has engaged in any form of academic dishonesty.