

Descriptive Astronomy (AST 2010) - online section

Course syllabus: Winter 2015

Note about the syllabus

THERE IS A LOT OF INFORMATION IN THIS SYLLABUS. PLEASE READ IT CAREFULLY AND THOROUGHLY BEFORE WRITING TO, OR CALLING THE INSTRUCTOR WITH QUESTIONS ABOUT THE COURSE.

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Communication via Blackboard forum and email is preferred. When sending email please ensure that the Subject of the email is **AST 2010**.

Prerequisites: None, although high school algebra is assumed

Course Synopsis

This course is an elementary introduction and survey of Astronomy. It covers a very large range of introductory topics including: The Sky, Orbits and Gravity, Earth-Moon-Sun System, Electromagnetic Radiation, Telescopes, The Solar System, Planet Earth, The Moon, Inner Planets, Outer Planets, Minor Bodies of the Solar System, The Sun, The Stars, Stellar Evolution, Relativity and Black Holes, The Milky Way, Galaxies, Quasars and Active Galaxies, Order in the Universe, Big Bang Cosmology.

Course Format

The course material/content is comprised of reading material from the course textbook (see below) and online material delivered through **Blackboard** and the Instructor's course website. Online material includes Powerpoint lectures, assignments, study guides, self-tests. Homework assignments and exams will all be taken **ONLINE** through the Blackboard system

Office Hours

I will reply to email and messages on Blackboard regularly, though please be patient - there are over 200 students in the class, so the number of emails I receive can be very large.

If you would like to meet me in person, please contact me by email to make an appointment, and I will be happy to meet with you at my office to answer questions or discuss any issues that you may have.

Textbook (ABSOLUTELY REQUIRED - No Exception!!)

- **Foundations of Astronomy by Seeds, Backman, and Pruneau, 2nd Edition, Brooks/Cole Cengage Publisher; Available exclusively at Barnes and Noble on campus in a looseleaf format and specially priced for Wayne State students.**
- The book is required (no exception).
- Use other editions at your own risks.

- It is imperative you read the textbook on a regular basis and do not wait till the last minute to learn the material.
- **IT IS YOUR RESPONSIBILITY TO GET A COPY OF THE TEXTBOOK AS QUICKLY AS POSSIBLE SO YOU CAN READ AND LEARN THE MATERIAL NEEDED TO COMPLETE THE WEEKLY QUIZZES.**

Blackboard System (<http://blackboard.wayne.edu>)

- Blackboard is used for general information related to the course, course announcements, online **weekly quizzes**, and for **exams**.
- If you are not familiar with Blackboard, obtain your login ID, and password as soon as possible and immediately test your ability to log on, navigate, and understand Blackboard's different features.
- **Weekly quizzes** (homework assignments) and **exams** will be taken through Blackboard.

Course Announcements

- Course related general announcements will be carried out through the Blackboard system, and by email.
- Log-on to the Blackboard website to see announcements and read your **Univeristy email** on a regular basis (e.g. at least every other day) to stay up-to-date with class information.
- Make sure your University e-mail box is not full.

Lectures: NONE

There are no lectures within the context of this AST2010 online section, however lecture notes in the form of PowerPoint slides are posted both on Blackboard and on the course website. These PowerPoint slides are from lectures that I and other instructors have given in the in-class sections and are part of the required reading for the online section.

Course Website

<http://ast2010.physics.wayne.edu>

The access to this website is controlled and limited to students of this and other AST 2011 classes.

Username: ast2010

Password: Winter2015

The username and password are case sensitive and must be typed exactly as above.

For each chapter, the website gives objectives, self-test questions, and a lexicon/glossary of key terms. Hence, it provides additional useful material compared to what is posted to Blackboard.

Reading Assignments

Reading assignments are given weekly - **see the Table below for the schedule**. Reading material includes the textbook chapters, and the lecture notes posted on Blackboard.

Homework assignments

- Weekly quizzes are given online using the Blackboard automated grading system.

- Homework can be done from home, campus, or anywhere you have access to a computer connected to the internet.
- Each homework consists of a few multiple choice questions - typically 10 in all from material covered in the week's reading. There may be simple calculations required for some questions. You will have typically 7 days to complete each online homework.
- There will be one homework per week.
- The material covered in homework is the material covered in the reading assignment of the current week.
- Do not wait until the last minute to do homework. Assignments CANNOT be begun or submitted after their due date and time, the Blackboard system will not give you a grade for that assignment and you will not get credit for it.
- Do not forget to press/click the SAVE AND SUBMIT button. Note that once the button is clicked, your answers are submitted and cannot be changed. So, think twice before submitting...but do not forget to submit!
- Homework #0 is a syllabus quiz in order for all students to familiarize themselves with the Blackboard system, as well as making sure you have read the syllabus! It does not count towards your grade, but you are required to take it and score at least 80% in order to take the following homework. Multiple retakes of this quiz are allowed.
- Each homework will be weighted equally for grading purposes.
- Your lowest homework score (excluding HW #0) will be dropped for the calculation of your final grade.

Exams

- There will be three hourly exams and one FINAL exam
- **Exams are taken online through Blackboard.**
- Hourly exams will consist of roughly 50 multiple choice, fill the blank, simple numerical calculations, or true/false questions. The FINAL will consist of roughly 80 questions of similar types.
- Material covered on each exam is shown in the table below. The final is a cumulative exam
i.e. covers all the material seen through the semester.
- Exam Makeups are restricted to **extreme** circumstances. "I forgot about the exam" **is not** an extreme circumstance. Makeup exams will be announced on Blackboard and scheduled as necessary when there is a network outage, server failure, or any other act of nature preventing at least several students from taking the exam.
- In case an exam date needs to be changed from what is listed in the Course Schedule below, the new date will be announced on Blackboard.
- The exams are timed and Blackboard will not permit you to continue to work beyond the time limit. **THE EXAM CLOCK STARTS RUNNING WHEN YOU BEGIN THE EXAM AND DOES NOT STOP RUNNING UNTIL YOU SUBMIT THE EXAM, EVEN IF YOU LOG OUT AND TRY TO RESUME LATER.**

- If you miss both the nominal and makeup times of the final exam, your grade will automatically be F -- NO EXCEPTION
- If you miss two or more exams, your course final grade will automatically be “F” -- NO EXCEPTION
- If you miss the final exam, your course final grade will automatically be “F” -- NO EXCEPTION
- Questions are **randomized** - each student gets a different set and sequence of questions.
- **MAKE SURE YOU USE A RELIABLE, ROBUST, and STABLE INTERNET CONNECTION. DO NOT, UNDER ANY CIRCUMSTANCES, USE A HANDHELD DEVICE (CELL PHONE, TABLET, etc) FOR TAKING AN EXAM - MOBILE DATA NETWORKS CAN BE SLOW AND UNRELIABLE AND YOU WILL NOT BE ABLE TO GUARANTEE COMPLETING THE EXAMS SUCCESSFULLY.**
- If your internet connection fails, you will be given **one and only one** additional attempt to take an exam. It is your responsibility to ensure that your internet connection is stable.

Planetarium Shows

- Two shows for AST 2010 at the College of Liberal Arts and Sciences planetarium will be scheduled and presented.
- These shows are a **REQUIRED** part of the course - attendance is taken and I will receive a list of attendees at the end of the semester. They count for a total of 6% of your grade.
- There will be an online quiz for each planetarium show and you will receive up to 2.5% extra credit for taking each quiz, based on your performance.
- The planetarium has a limited/small number of seats. Many presentations of each show will therefore be scheduled.
- Dates and times of the presentations will be posted on the planetarium website. <http://physics.wayne.edu/~planetarium> and on blackboard.
- **The planetarium is located at the lower level of the Old Main Building.**

Student Emails

- Look for announcements on BLACKBOARD, or BLACKBOARD FAQ PAGE (FREQUENTLY ASKED QUESTIONS), or check
- Blackboard before sending e-mails to your instructor about homework due dates, exam dates, etc.
- EMAIL WILL NOT ALWAYS BE ANSWERED ON AN INDIVIDUAL BASIS - CONSULT YOUR UNIVERSITY EMAIL, ANNOUNCEMENTS OR THE DISCUSSION BOARD ON BLACKBOARD FOR ANSWER TO YOUR QUESTIONS.
- Please follow proper etiquette in your emails and address your instructor as “Professor Cackett” or “Dr. Cackett”. Rude or improper emails will not be answered.
- **Please be patient** - there are many students in this class.

Grading

Your final grade in this course will be based on the following items:

Homework/Blackboard quizzes	30%	Lowest HW dropped
Three hourly exams	48%	Each counts for 16%
Final Exam	16%	
Planetarium Attendance	6%	Each show counts for 3%
TOTAL	100%	
Planetarium Quizzes Extra Credit	2.5% per quiz	

The course grade will be assigned according to the total number of percentage points as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
95-100	90-94	85-89	80-84	75-79	70-74	65-69	60-64	50-59	<50	If two or more exams are missing

Laboratory (AST 2011)

- The laboratory is a separate course (AST 2011), graded separately/independently, with a different instructor.
- The laboratory is required for all students taking AST2010 + AST2011 for $4 + 1 = 5$ credits.
- While the lab is not required for all programs, it is **highly** recommended.

Important Notes

- There is a large amount of material in this class.
- It is absolutely critical you do not wait till the last minute to prepare for the exams.
- Read the chapters in the textbook weekly.
- Solve/complete the quiz questions/problems weekly.
- Try all self-test questions.

Learning Objectives

After completing this class, you are expected to:

1. Understand the basic cycles experienced by humans
 - a. Why we have Day and Night
 - b. Why we have Seasons
 - c. Why we use a calendar based on 7 day weeks, and approximately 30 day month, and years
2. Understand your place in the Universe and the basic hierarchy of the Universe and

the various processes that take place within it:

- a. Solar System:
 - Why we know the Earth revolves around the Sun
 - Understand the structure of the solar system, and know basic facts about the planets
 - Have basic knowledge of the basic principles that determine the formation of the solar system, and its evolution
 - Understand at a basic level the techniques used by scientists to estimate the age of the Earth at 4.5 billion years.
 - Know there are other solar systems, and understand at a basic level the methods used by astronomers to detect them.
 - b. Stars:
 - Understand the Sun is a medium size star among several billion others in our galaxy, the Milky Way.
 - Understand the basic classification of stars
 - Understand the basic steps in the birth, evolution, and death of stars
 - Be familiar with some exotic objects such as neutron stars, and black holes.
 - Understand that all elements heavier than helium were synthesized in stars or supernova explosions - which is why astronomers say we are “star dust”
 - c. Galaxies:
 - Be familiar with the basic steps involved in the discovery of galaxies
 - Be familiar with basic classifications of galaxies, their attributes, and evolution
 - Be familiar with the existence of larger structures known as clusters and super clusters.
 - d. Cosmology:
 - Be familiar with the notion that all galaxies are receding from one another and what it means
 - Understand at a basic level the evidence for a big bang
 - Understand at a basic level the techniques used by astronomers to estimate the age of the universe
 - Understand that the notion that the Universe is infinite in size but that we can only see the fraction within the cosmic horizon.
3. The question of the origins:
- a. Have a basic understanding of the evidence for geological ages on Earth, and the biological evolution of species
 - b. Have a basic understanding of the origins of the Earth and the Solar System
 - c. Have a basic understanding of the origins and evolution of stars and galaxies
 - d. Have a basic understanding of the evolution of the Universe since the big bang
4. The Scientific Method:
- a. Understand the basic principles of the scientific method
 - b. Understand the notions of hypothesis, model, theory, law of nature
 - c. Understand at a basic level the process whereby scientists use facts, obtained by quantitative measurements of natural phenomena, to compare the merits of models, and formulate an increasingly more accurate model (theory) of nature.
5. Basic Scientific Theories:
- a. Have basic familiarity with physics principles of velocity, acceleration, energy, potential energy, force, pressure.

- b. Have basic familiarity with fundamental laws of nature including conservation of energy, conservation of momentum, conservation of angular momentum
- c. Have basic familiarity with theories about the structure of matter and forces, including the structure of the atom, structure of the nucleus, existence of several classes of elementary particles, and the fundamental forces that rule them.
- d. Have basic understanding of the nature of light and electromagnetic waves, and their properties, including the notions of wavelength, frequency, amplitude, and velocity.
- e. Have basic familiarity with the four fundamental forces of gravity, electromagnetism, strong nuclear force, and weak nuclear force.

Religious holidays

Because of the wide variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

Note, however, that you are given seven days to complete each assignment, either homework or exam, so you can, most likely organize your study and work schedule and have plenty of time to complete the assignments.

Student Disability Services

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

See the SDS website for more information: <http://studentdisability.wayne.edu/>

Academic Dishonesty

Plagiarism and Cheating (edited statement from the DOSO's web site): Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (<http://www.doso.wayne.edu/student-conduct-services.html>).

Students who commit or assist in committing dishonest acts are subject to downgrading ! (to a failing grade for the test, paper, or other course-related activity in question, or for ! the entire course) and/or additional sanctions as described in the Student Code of Conduct.

Cheating: Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise.

Examples include: (a) copying from another student's test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

Fabrication: Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

Plagiarism: To take and use another's words or ideas as one's own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student's access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

Course Drops and Withdrawals:

In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: <http://reg.wayne.edu/pdf-policies/students.pdf>

Readings, Homework and Exams Schedule

See the Table on the following page.

Readings, Homework and Exams Schedule

Week	Date from	Date to	Reading Chapter #	Homework Exams	Homework Exams Due Date*
1	01/12/15	01/18/15	1	HW0 (syllabus quiz)	01/18/15
2	01/19/15	01/25/15	2	HW1: Chp 1, 2	01/25/15
3	01/26/15	02/01/15	3, 4	HW2: Chp 3, 4	02/01/15
4	02/02/15	02/08/15	6, 7	HW3: Chp 6, 7	02/08/15
	02/02/15	02/08/15	1, 2, 3, 4, 6, 7	EXAM 1	02/08/15
5	02/08/15	02/15/15	8, 9	HW4: Chp 8, 9	02/15/15
6	02/16/15	02/22/15	11, 12	HW5: Chp 11, 12	02/22/15
7	02/23/15	03/01/15	13, 14	HW6: Chp 13, 14	03/01/15
	02/23/15	03/01/15	8, 9, 11, 12, 13, 14	EXAM 2	03/01/15
8	03/02/15	03/08/15	15, 16	HW7: Chp 15, 16	03/08/15
9	03/09/15	03/15/15	17, 18	HW8: Chp 17, 18	03/15/15
10	03/16/15	03/22/15	<i>Spring Break</i>		
11	03/23/15	03/29/15	19, 20	HW9: Chp 19, 20	03/29/15
	03/23/15	03/29/15	15, 16, 17, 18 19, 20	EXAM 3	03/29/15
12	03/30/15	04/05/15	21, 22	HW10: Chp 21, 22	04/05/15
13	04/06/15	04/12/15	23, 24	HW 11: Chp 23, 24	04/12/15
14	04/13/15	04/19/15	25, 26	HW12: Chp 25, 26	04/19/15
	04/29/15	05/05/15		FINAL	

* All assignments due at 11:59 PM on the dates shown.