ASTR 1412 – Stars and The Universe
COURSE SYLLABUS: Fall 2012

Instructor: Dr. Kurtis A. Williams, Assistant Professor
Office Location: Science 145
Office Hours: M 10:30–11:30, Th 10:30–11:30, F 11:00–12:00, or by appointment
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Please include "ASTR 1412" in the subject line.

Course Location and Time:
Lectures: T and Th 12:30 p.m. – 1:45 p.m. in the Planetarium (Science 125)
Labs: T 2:00 p.m. – 3:50 p.m., T 5:00-6:50 p.m., or F 3:00-4:50 p.m. in either the Planetarium or Science 107

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings:

Textbooks Required:

- Astronomy Today Vol. 2: Stars and Galaxies, 7th edition, Chiasson & McMillan
- MasteringAstronomy
- Lecture Tutorials for Introductory Astronomy, 2nd edition, Prather et al.
  - *This book should be brought to every lecture!*

These texts may be purchased as a bundle through the campus bookstore. If you purchase them elsewhere, be sure to compare prices on all three components.

Course Description:
Astronomy is an ancient science with records dating back to the dawn of civilization. Despite this long history, it remains an exciting and vibrant area of ongoing study. In the coming years, astronomers may discover Earth-sized planets around other stars, see the first stars emerging from the cosmic dawn, and explore new physics in realms and laboratories that Earth-bound scientists can only dream of.

In this course, we will focus on studying stars and galaxies, as well as the natural laws and tools that astronomers use to study these distant objects. We'll begin by studying the night sky and the Sun, and use these as stepping stones to reach ever further into the Universe. Along the way we'll discover new worlds around other stars, peer into the hearts of black holes, witness collisions of galaxies, and piece together vital clues pointing to the origins of the Universe.

One topic we will not cover is our own Solar System. If you want to know details about the eight (or nine) planets, their moons, asteroids, meteors, and comets, you'll need to take ASTR 1411.

Prerequisites: None

Student Learning Outcomes:

1. You will be able to identify several items in the night sky, including the more prominent constellations of each season, some of the more important stars, the Milky Way, and some star clusters.
2. You will be able to explain important characteristics of stars and their life cycles.
3. You will be able to identify different types of galaxies and explain their basic properties.
4. You will be able to describe astronomer's current explanations for the origin of stars, galaxies, and the Universe, and to state the evidence supporting these explanations.
5. You will be able to apply scientific reasoning to astronomical phenomena and be able to separate good science from bad science and pseudoscience.

COURSE REQUIREMENTS

Instructional / Methods / Activities Assessments

Attendance and Classroom Participation

The lectures in this course may be significantly different than those in many courses you have taken. I feel that there is only so much a student can learn from a lecture, no matter how entertaining I may be. At some point, you need to take the knowledge, work with it, and make it your own. Therefore, each lecture will consist of two or three mini-lectures, interspersed with various short interactive activities. Your participation in these will be key to your success in understanding the material.

For these reasons, **attendance and class participation are mandatory and will count toward your final grade.** I realize that most of you are not comfortable speaking up in front of a large group of people, so class participation will come in a variety of forms, including interactive polling, small group discussions, and short in-class writing assignments. These in-class activities are graded primarily on whether you make an effort to participate. There is no penalty if you get an answer wrong, but correct answers may receive a small amount of extra credit.

Because your attendance at lecture will be crucial to your receiving a good grade, and because I want you to receive a good grade, there are *no* excused absences in this class. However, the participation grade is structured so that you can miss two lectures with no effect on your grade. So, if you are ill, stay home. If you play sports and need to miss class for a game or meet, do so. If an emergency comes up, attend to it. If there is a special lecture or concert you wish to go see, you may do so. As long as you have been attending regularly, such an absence will not affect your grade.

One tool will be used commonly in our lectures: the required *Lecture Tutorials in Astronomy*. This book should be brought to every lecture, though we will not always use it. If you do not have this text on a day it is used, you'll get a 0 for that day's participation.

Your participation portion of the grade is determined as follows. You may miss two lectures without penalty. After that point, your grade is determined based on the percentage of participation points earned. For example, there will be approximately 30 lectures during the semester. If you earn participation credit in 28 of them, you will receive 100% for your participation grade. If you earn participation credit in 24 lectures, your participation grade will be 24 out of 28, or an 86%.

Exams:

Two midterm exams will be given during the semester; tentative dates for these exams are at the end of this syllabus. The midterms will focus on material covered since the previous exam, but many topics are interrelated, so topics from previous exams will come up again. There will also be a cumulative final exam. Part of the final exam will be given during the final lab meeting, and the rest during the scheduled final exam slot.

Makeup exams may only be taken under extenuating circumstances. I will require documentation of the reason for the absence, and I reserve the right to reject any excuse. In most cases, makeup exams will be scheduled within 2 days of the exam. Please do everything in your power to be present for an exam. There is no makeup exam possible for the final exam.

For midterms and the non-lab final, you will need to bring a pencil and a scantron sheet. You may also bring a single sheet of 8 ½ x 11 paper containing whatever formulae, notes, other information, or doodles you'd like (double-sided is okay). No other books, backpacks, calculators, computers, iPods, headsets, cell phones, PDAs, tricorders, etc. will be permitted. Using any aids other than your single cheat sheet will result in you being removed from the exam and a grade of a zero.

If you are certified as needing special accommodations for examinations, please see me privately well before the exam with you letter of accomodation from the Student Disability Resources and Services office.

Homework:

Homework will be assigned often. We will be using MasteringAstronomy, an online astronomy homework and tutoring tool, for most homework assignments. MasteringAstronomy will give you instant feedback on whether you got a homework question right or wrong and provide you with hints and tools to better learn the material.

The grading policy for each MasteringAstronomy assignment can be viewed by clicking on "Grading Policy" in each assignment. You may get multiple attempts to answer a question correctly; however, submitting an incorrect answer will cost you some credit. Some more difficult or mathematical questions may be assigned as extra credit for students who want more of a challenge. MasteringAstronomy will identify these questions as extra credit.

Occasional assignments outside of MasteringAstronomy may also be made.

Assignments will be announced in class and due dates will be clearly specified. Late homeworks are penalized 25% per day. Your lowest homework score will be dropped.

The following are considered cheating and will not be tolerated: Searching for answers on the internet, obtaining copies of solutions to homework questions (whether from past students or other sources), directly copying another student's work, etc. See the section on "Academic Integrity" below for full details.

Labs:

Labs are mandatory and are part of your grade. **By University policy, if you receive a failing grade (<60%) in the lab portion of the class, you will fail the class.** Labs

will be held in either the Planetarium or in room 107 of the science building. I will inform you which place to go each week. Be sure to have a pencil, a calculator, and a notebook with you. Because lab space is limited, you must go to the lab period for which you are enrolled every week unless you get prior approval from the instructor. Your lowest lab score will be dropped. **No makeup labs are available**. The final lab session will contain a constellations test that counts as 20% of the final exam score.

Observatory Visit:

At some time in the semester, we will have an optional visit to the Observatory. The date and time of this visit will be announced well in advance. At this session, there will be an activity you can complete that will count as extra credit toward your lab grade.

Grading

Grading will be done on an absolute scale with no "curves" and no competition. If you all earn A's, you all get A's. Your current grades will be available through a website called JupiterGrades.com throughout the semester so you can see how you are doing. Instructions for accessing these grades will be distributed during thesecond week of class. The gradebooks accessible through MasteringAstronomy and eCollege are not official.

Extra credit opportunities may be announced during the semester. Outside of announced opportunities available to the entire class, there is no extra credit available.

The grading breakdown is as follows:

Homework Assignments	20%
Midterms	30% (15% each)
Final	20%
Labs	20%
Classroom Participation	10%

The grading scale is:

90% to 100%	A
80% to 89.9%	B
70% to 79.9%	C
60% to 69.9%	D
Below 60%	F

See the Attendance and Classroom Participation discussion above for how I determine that portion of your grade.

TECHNOLOGY REQUIREMENTS

This course will be a web-enhanced course. Some course work will require use of materials online. In order to use the web enhancements, you will need an Internet access/connection – high speed recommended (not dial-up). Additionally, the following hardware and software are necessary to use eCollege:

- Our campus is optimized to work in a Microsoft Windows environment. This means our courses work best if you are using a Windows operating system (XP or newer) and a recent version of Microsoft Internet Explorer (6.0, 7.0, or 8.0).

- Your courses will also work with Macintosh OS X along with a recent version of Safari 2.0 or better. Along with Internet Explorer and Safari, eCollege also supports the Firefox browser (3.0) on both Windows and Mac operating systems.

- It is strongly recommended that you perform a "Browser Test" prior to the start of your course. To launch a browser test, login in to eCollege, click on the 'myCourses' tab, and then select the "Browser Test" link under Support Services.

ACCESS AND NAVIGATION

Homework and Reading Quizzes must be completed using MasteringAstronomy, http://www.masteringastronomy.com. You are required to purchase a semester-long subscription to this site; it comes included with the textbook bundle available through the bookstore, or it can be purchased separately at a reasonable price (see the website for details). Our Course ID in MasteringAstronomy is ***TAMUC1412F2012***. MasteringAstronomy has support available at: http://masteringastronomy.com/site/support/faq-students.html

Class materials such as copies of PowerPoint slides and electronic versions of handouts will be made available through eCollege, the Learning Management System used by Texas A&M University - Commerce. To access these materials, go to: https://leo.tamu-commerce.edu/login.aspx. You will need your CWID and password to log in. If you do not know your CWID or have forgotten your password, contact Technology Services at 903-468-6000 or helpdesk@tamu-commerce.edu.

I have set up a Twitter account @prof_kwilliams (http://twitter.com/prof_kwilliams). This feed will be used primarily for reminders and important class updates; search the feed for #astr1412 to get updates for this class. You do not need a Twitter account to view these updates.

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement:

Office Hours: Office hours are times that I set aside when I promise to be in my office so that you can come by and talk to me. During office hours, you can ask questions about the course material, ask about homework, see your current grade, or ask other questions about the class or astronomy in general.

It's important to realize that office hours are not just for students who are having problems in the course. If you are uncertain about anything, please visit before your small problems grow into big ones. If you are worried about what might be on the test, stop in. If you are curious about astronomy jobs and research opportunities, come by.

Office hours work best if you bring your textbooks, class notes, and homework sets with you.

If you want to talk but cannot come during office hours, please contact me by email in order to set up an individual appointment. By setting an appointment, you both guarantee that I will be in my office and that I will have plenty of time to talk with you. You may feel free to stop by my office any time my door is open, but if you do not have an appointment and if it is not my

scheduled office hours, please understand if I'm not free to talk at that instant.

Email: I can be reached by email at Kurtis.Williams@tamuc.edu. Please allow up to 24 hours for a response (48 hours on the weekend or holidays). Because of privacy rules, I cannot discuss grades via email.

Twitter: Course announcements and other notes of interest will be disseminated through Twitter. However, you should not assume that I will read (or even see) responses to tweets. No crucial information will given out only on Twitter.

Netiquette:

I expect all students to behave to basic standards of etiquette on the web (and in real life). Abusive or inappropriate comments will be removed and earn a reprimand; any additional lapses could result in disciplinary action. For a simple guide to netiquette, see http://www.albion.com/netiquette/corerules.html

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures:

Classroom behavior: I require you to follow some simple good manners that will make class time much more productive for you and your fellow students. If you break any of these rules, you will be asked to leave and receive a 0 for that day's participation.

During lecture and labs,

- Do not be disruptive or disrespectful.
- Turn off your cell phone ringer.
- If you must answer your phone, leave the room before speaking.
- Do not send or view texts, tweets, emails, photos, or any other communication.
- Do not use your computers for any non-class-related purpose.
- Do not listen to iPods, MP3 players, Pandora, mouth organs, or any other type of noise-making device.
- Don't read the newspaper.

If you need to briefly leave the session to use the restroom, get a drink, answer/make an important call, or other reasonable reason, you may do so without asking permission except for during exams. As long as you return within a few minutes, your participation grade will not be affected.

Planetarium rules: The planetarium has some basic rules that absolutely must be followed, or you will be excused from a lecture/lab and given a zero for that day's participation.

- ***ABSOLUTELY NO FOOD OR DRINK IS ALLOWED IN THE PLANETARIUM***.
- You may only enter the planetarium from the right-hand door (i.e., the open one).
- During planetarium demonstrations (i.e., when the room is dark), remain in your seat.
- If you are out of the room when a demonstration starts, you may not enter until the demonstration is over.

Academic integrity: A major goal of this and most every university course is for you to learn and appreciate subject material. Academic dishonesty ("cheating") actively prevents you from achieving this goal. Academic dishonesty is taken seriously by the University and by me, and will not be tolerated. (See the TAMU-C Code of Student Conduct and the

TAMU-C Procedures A 13.04, 13.12, 13.31, and 13.32.)

This conduct is not only considered wrong in this course and at this University, but also in the real world. Engaging in these activities will get you fired from a job and prevent you from getting another job.

Unethical student conduct includes:

- **Plagiarism**, or copying the words of others with the intent of making it look like your own. Whether you use someone else's phrase word for word, or whether you try and change a few words, or even if you just borrow someone else's original idea and don't give them credit, that's unethical. Use your own words whenever possible, give credit to wherever you got an idea, and put direct quotes inside quotation marks.
- **Cheating** involves trying to trick me or others into thinking you did work that you really didn't do, or into thinking you know what you really don't know. This can include stealing exams, changing your answers on a graded exam or assignment and claiming it was graded wrongly, putting your name on someone else's homework, and so on. **Searching the Internet for homework or exam solutions is considered cheating**. Borrowing a previous student's homework, exams, or solution sets is considered cheating.
- **Collusion** is working with another person to cheat. This can include copying someone else's answers to an exam or assignment, doing work for another student, buying or otherwise obtaining homework/exam solutions from any source online or off-line, or any other instance of multiple people engaging in some form of cheating or dishonesty. Working with other students on an assignment is fine as long as everyone contributes and each student does their own work.
- **Any other activity that, to a reasonable person, looks wrong.** If you have any doubt whatsoever whether a certain action is considered dishonest, please ask me *before* engaging in the activity. There is no need to be embarrassed about asking, and I won't penalize you for asking! In this class, if you follow the maxim "it's easier to beg forgiveness than to ask permission", don't expect forgiveness to be forthcoming.

If you engage in academic dishonesty during any graded activity, you will receive no credit for that activity. More than one instance of dishonesty by a student will result in automatic failure of the course and referral of the student for disciplinary action.

For further information, search the Texas A&M-Commerce website for "academic integrity policy".

MasteringAstronomy and eCollege provide me with tools that check for common forms of online cheating and collusion. These include, but aren't limited to: time stamps, location stamps, and automated comparison of essay anwers. I will use these tools.

University Specific Procedures:

ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamu-commerce.edu
Student Disability Resources & Services

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook).*

COURSE OUTLINE / CALENDAR

The course will cover many of the topics outlined below. How long we spend on each topic will vary.

- Tools of the Astronomer
  - Size Scales
  - The Scientific Method
  - Newton's Law's and Gravity
  - Light and Atoms
  - Telescopes
- Stars
  - The Sun
  - Measuring the Stars
  - Finding Planets in other Solar Systems
  - Life in the Universe
  - The Birth, Life, and Death of Stars
  - Stellar Explosions
  - Neutron Stars and Black Holes
- Galaxies
  - The Milky Way
  - Other Galaxies
  - Dark Matter
- Cosmology
  - Dark Energy
  - The Fate of the Universe
  - The Birth of the Universe

Course Calendar:

- **Midterm dates** (tentative):
  - 1st : September 27
  - 2nd: October 25
  - All midterms are in the planetarium during class
- **Constellation test** (part of final exam): Week of December 3 during lab
- **Final exam**: Thursday, December 13, **10:30-12:30** in the planetarium
- Optional observatory trip TBA