



ASTR 337 – Frontiers in Astronomy COURSE SYLLABUS: Spring 2018

WHO I AM

Instructor: Dr. Kurtis A. Williams, Associate Professor

Office Location: Science 145

Office Phone: 903-886-5516

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Office Hours:

Science 145: Tues 9:30-10:30, Wednesday 9:30-10:30, or by appointment

Science 111 (Peer Learning Lab): Thurs 2:45-3:45

Course Locations and Times:

MWF 11:00am – 11:50am in McFarland Science Building, Room 122

University Email Address: Kurtis.Williams@tamuc.edu[†]

Please include “Astro Frontiers” in the subject line.

Preferred Form of Communication: Email or Remind chat

Response Time: 24 hours on weekdays

WHAT THIS COURSE IS ABOUT

Course Description:

This is a one-semester survey of cosmic catastrophes, or energetic phenomena that could pose a serious threat to humanity. We will also learn some of the physics and mathematics needed to explain these phenomena. We will therefore need to use high-school level mathematics, including algebra and geometry.

We will be using a variety of learning techniques in the course in addition to lectures, including in-class activities, online activities and homework, and individual reading. Your active participation in all aspects of the course will not only enhance your understanding of the material, but also help your grade.

Prerequisites:

Astr 1303, and 1304 or 120, or instructor’s approval.

Student Learning Outcomes:

1. You will apply conservation laws to predict astrophysical phenomena.
2. You will discuss how different pathways of stellar evolution lead to different high-energy phenomena.

3. You will describe state of our knowledge of the unanswered questions that dominate current astronomical research.
4. You will present current astronomical research in written, visual, and verbal format to an audience of your peers.

WHAT YOU ABSOLUTELY NEED

Materials – Textbooks, Software and Additional Reading:

Texts Required:

Cosmic Catastrophes, 2nd Edition, J. Craig Wheeler, Cambridge

Recommended texts:

A recent introductory astronomy book covering at least stars and galaxies. Some options are available in the Peer Learning Lab in Sci 110 if you need to borrow one (please do not remove books from the lab).

Required Equipment:

You will need to have access to a scientific calculator that is not part of your smart phone. Graphing functions are not required. For example, Walmart.com has a TI-30X IIS and a Casio Scientific FX 300ES for \$11 each; these are sufficient. Graphing or programmable calculators are not necessary but are acceptable.

HOW TO GET STARTED

How This Course Is Organized

This course will be organized by units. Some units will last just one week, but some units will cover multiple weeks. Some units cover one chapter in the text, some cover multiple chapters. You should listen in class and check the course page often to see what activities and assignments are coming due.

What Should You Do First?

After attending class and reading this syllabus, you should proceed to the course page on eCollege and familiarize yourself with the resources. Next, order the course materials if you haven't yet. Finally, begin complete the activities and assignments under Unit 1. Due dates are specified on eCollege.

HOW THE COURSE WILL WORK

Instructional Methods / Activities / Assessments

Attendance and Participation

Research into how people learn shows that the best learning comes from interaction. Simply reading material and listening to me drone on won't help you learn anything useful. I therefore will require you to participate actively in the course.

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 short lectures focusing on important concepts with which students tend to struggle interspersed with various 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.

Attendance and participation grading policy: You automatically get three excused absences, *no documentation required.* After these excused absences, all absences count against your participation grade. Note that a few non-excused absences don't affect your grade much at all, but excessive absences can. may miss three lectures without penalty. For example, there will be approximately 40 lectures during the semester. If you earn participation credit in 37 of them, you will receive 100% for your participation grade. If you earn participation credit in 34 lectures, your participation grade will be 34 out of 37, or 92%.

Exams

Three exams will be given during the semester, two midterms during the semester and comprehensive final exam during the university-assigned final exam slot. During the exams, you may use a 1-page cheat sheet and a scientific calculator. No other aids will be permitted.

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.

If you are certified as needing special accommodations for examinations, please be certain to contact the Student Disability Resources and Services office to ensure I am properly notified; I can then speak with you privately if you have any questions.

Homework

Homework will be assigned often. Assignments will be announced in class and due dates will be clearly specified. Late homeworks are penalized 10% per day, up to a maximum of 70%. After 7 days, any missing homework will receive a zero.

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.

Research Projects

During the semester, you will do two research projects on topics covered in the class. Peer grading will be part of your grade. Details and grading rubrics will be provided in class.

Mathematics

This class includes a wide range of students. Some of you are physics majors; many of you are not. In order to teach at a level where everyone can learn, most lectures will be pitched at a level appropriate for everyone. However, every once in a while I will have a “derivation diversion” that will delve into the mathematics more deeply for the sake of science majors and may include some calculus. I will clearly delineate these portions of the lecture. Material covered in these lectures will be required for science majors but not for others. However, I do ask that everyone stick around in these parts of the lecture and attempt to follow along.

Homework assignments and exams will contain a few clearly labeled “advanced problems” that will use the material covered in the advanced classes. Again, these problems will be required for science majors, but not for everyone else.

Grading

Grading is on an absolute scale with no competition. If you all earn an A, you all get an A. I may “curve” grades for specific assignments at my discretion; your percentage earned will never go down if I apply such a curve. Your current grades will be available through the gradebook on eCollege. Any other gradebooks are *not* official.

Grading is weighted by assignment using the following weights:

Assignment Type:	Weight:
Attendance / Participation	10%
Homework Assignments	30%
Midterm Exam	20% (10% each)
Final Exam	15%
Research Projects	25% (12.5% each)

The grading scale is:

Percentage Range	Letter
90% to 100%	A
80% to 89%	B
70% to 79%	C
60% to 69%	D
Below 60%	F

HELP!!!!

Are you lost, confused, or worried?

First, **DON'T PANIC!**

Next, step back and try and pinpoint the source of your confusion:

- Have you read the textbook sections? If not, go read them! If you have, maybe you need to try a different reading methods. Science textbooks are not like novels; they present information in a completely different method than most reading material, and there is no

plot thread unfolding as you get further into a chapter. Here are some websites with suggestions on how to read science textbooks:

- How to Read Effectively in the Sciences:
<http://academic.cuesta.edu/acasupp/AS/621.htm>[†]
- Reading Assignments in Science:
<http://www.studygs.net/science/readingtexts.htm>[†]
- The SQ4R Method for Reading: <http://scs.tamu.edu/?q=node/105>[†]
- Do you just need some time away? Astronomy is too much to deal with all at once. Work on the assignment over the week and give your brain some time to absorb and mull over the information. In particular, don't wait until the deadline to do your homework! You can start your homework do a few problems, go away a couple days, and pick up where you left off, and not lose any points.
- If after all of this you are still confused or uncertain, it's time to seek help. Don't wait until the exam! Here you have many options:
 - Talk to your classmates
 - Attend my office hours (see next section). You can come to any of the scheduled times or make an appointment with me if none of those times work.
 - If you are still stuck, contact the Academic Success Center to search for other options that may help you.
<http://www.tamuc.edu/studentLife/campusServices/academicSuccessCenter/>[†]
 - Go to the online One Stop Shop created to serve you by attempting to provide as many resources as possible in one location.
<http://www.tamuc.edu/admissions/onestopshop/>[†]

Are you experiencing technical difficulties?

If your problems are with eCollege:

Note: Personal computer problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, an Internet cafe, or a bookstore, such as Barnes & Noble, etc.

Policy for Reporting Problems with eCollege:

Should students encounter Pearson eCollege based problems while submitting assignments, the following procedure **MUST** be followed:

1. Students must report the problem to the help desk. You may reach the helpdesk toll free at 1-866-656-5511
2. Students **MUST** file their problem with the helpdesk and obtain a helpdesk ticket number
3. Once a helpdesk ticket number is in your possession, students should email me to advise me of the problem and to provide me with the helpdesk ticket number
4. At that time, I will call the helpdesk to confirm your problem and follow up with you

PLEASE NOTE: Your personal computer/access problems are not a legitimate excuse for filing a ticket with the Pearson eCollege Help Desk. You are strongly encouraged to check for compatibility of your browser **BEFORE** the course begins and to take the Pearson eCollege

tutorial offered for students who may require some extra assistance in navigating the Pearson eCollege platform. **ONLY** Pearson eCollege based problems are legitimate.

Please don't contact me for eCollege problems. I'll just tell you to take the above steps

If your problems are with myLeo:

Your myLeo email address is required to send and receive all student correspondence. Please email helpdesk@tamuc.edu[†] or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at [myLeo](https://leo.tamuc.edu)[†]. <https://leo.tamuc.edu>[†]

HOW TO CONTACT ME AND STAY CONNECTED

Interaction with Instructor

Email:

I can be reached by email at Kurtis.Williams@tamuc.edu[†]. Please put “Astro Frontiers” in your email subject header. It may take me up to 24 hours to send you a response (48 hours on the weekend or holidays). If you don't hear back from me in that time, please send another email or give me a call. I assume you check your campus email daily, so if I send out a class email, I'll assume you read it.

Texts and Email Announcements:

I have set up an SMS (text and/or email) account for brief messages, like reminders of due dates, updates on class events, and other crucial messages. I expect you to make use of this service.

To register for text (SMS) updates, text “@astr337” (without quotes) to 81010 or (754) 333-5306. The service is free, but any standard messaging fees charged by your mobile provider will apply. To get automated email copies of any texts (like if you don't have texting or don't want to pay for it), send a blank email to: astr337@mail.remind.com[†]. The service is also private: nobody (including myself) will see your phone number or email, and only I can send messages.

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. Office hours work best if you have your textbook and class notes with you.

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, email, phone or drop into virtual hours 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, come by.

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 (or online) 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.

Social Media:

Please don't friend me on social media during the semester; my feeds are uninteresting.

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>

RULES, RULES, RULES (UNIVERSITY POLICIES)

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

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 and simply cutting/pasting the text you find is considered cheating.*** Searching the Internet for help on a topic is okay. For example, suppose a question asks "Describe the life cycle of a star that has the same mass as the sun." Typing that phrase into Google and cutting and pasting the text in the answer box is considered cheating. Typing "star life cycles" into Google, reading a few web pages, and summarizing the information in your own words is not cheating.
 - ***Borrowing a previous student's homework, exams, or solution sets is***

considered cheating. “Borrowing” includes looking at someone’s submitted homework, screen shots, stealing returned homeworks, and so on.

- **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”.

Administrative Withdrawal

Although I have the right to drop you for excessive absences, I won’t do so. You have a right to get an F if you decide to quit working but don’t withdraw.

Assignment Policy and Due Dates

Assignments and due dates will be announced in class and posted on eCollege in the main page for each unit. Submission requirements for each assignment will also be given on that page.

Dropping The Course

A student may drop this course by logging into their myLEO account and clicking on the hyperlink labeled 'Drop a class' from among the choices found under the myLEO section of the Web page.

Harassment Policy

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here:

University Title IX Contact: Michele Vieira, 903-886-5025, <mailto:TitleIX@tamuc.edu>[†]

University resource webpages:

<http://www.tamuc.edu/facultyStaffServices/humanResources/title-ix/resources.aspx>[†]

<http://www.tamuc.edu/campuslife/campusServices/universityPoliceDepartment/crimePrevention/sexualAssault.aspx>[†]

University Counseling Center: 903-886-5145,
<http://www.tamuc.edu/campusLife/campusServices/counselingCenter/default.aspx>[†]

Campus police: <mailto:upd@tamuc.edu>[†], call 911 in emergency situations

External resources:

Crisis center of NorthEast Texas: <http://www.ccnex.org>[†]

Know your IX: <http://knowyourix.org>[†]

End rape on campus: <http://endrapeoncampus.org>[†]

Clery Center for Security on Campus: <http://clerycenter.org>[†]

Not Alone: <https://www.notalone.gov>[†]

Incompletes

I only offer incompletes in extraordinary circumstances. Any student interested in an incomplete should contact me as soon as possible after the situation arises, and should keep in mind that I am not required to give you an incomplete and so may not offer you the opportunity. You should also know that you only have access to an eCollege course for two weeks following the final day of term.

Late Work

Late assignments are penalized 10% for each day late (including weekends), up to 70% penalty. After 7 days, any missing assignments will receive a zero. If you fail to take an exam, you will receive a zero.

University Specific Procedures

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

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

Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

StudentDisabilityServices@tamuc.edu[†]

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*).

Campus Concealed Carry

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to <http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>[†] and/or consult your event organizer. Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

The course will cover many of the topics outlined below. The dates below may change, so pay attention to announcements for final precise dates.

- Unit 1: Setting the Stage (Jan 17–24) – Ch. 1.1 and 1.2
- Unit 2: Stellar Evolution and Stellar Death (Jan 26–Feb 2) – Ch 1.3 and Ch 2
- Unit 3: Binary Stars (Feb 5–14) – Ch 3 and Ch 4
- Unit 4: White Dwarfs and Cataclysmic Variables (Feb 16–26) – Ch 5
- Unit 5: Supernovae (Feb 28–Mar 9) – Ch 6 and Ch 7
- Unit 6: Neutron Stars (Mar 19–23) – Ch 8.1-8.5
- Unit 7: Relativity and Black Holes (Mar 26–Apr 5) – Ch 9 and Ch 10
- Unit 8: Gamma Ray Bursts (Apr 9–13) – Ch 11
- Unit 9: Supernovae and Cosmology (Apr 16–27) – Ch 12
- Unit 10: Beyond the Frontiers (Apr 30–May 4) – Ch 13 and Ch 14

Course Calendar:

- *Exam 1*: Wednesday, February 21, in class, Units 1–3
- *Exam 2*: Monday, Apr 12, Units 4–7
- *Final Exam*: Wednesday, May 9, 10:30-12:30pm
- *Research Project 1*
 - *Report Due Date*: Friday, March 9
- *Research Project 2*
 - *Poster and Report Due Date*: Friday April 20
 - *Peer Grades Due*: Monday, April 30