



Astr 1303.01E: Stars & The Universe

COURSE SYLLABUS: Fall 2020

INSTRUCTOR INFORMATION

Instructor: Dr. Kurtis A. Williams, Associate Professor

Office Location: Room 145, McFarland Science Building

In-person Office Hours:

M 3:00-4:00

W 10:30-11:30

Virtual Office Hours:

T 8:00pm-9:00pm

Th 3:00-3:45 pm

Office Phone: (903) 886-5516

University Email Address: Kurtis.Williams@tamuc.edu

Preferred Form of Communication: **email or Remind chat**

Communication Response Time: Before the end of the following business day

Preferred Pronouns: He/his

TEACHING AND LEARNING ASSISTANTS

Graduate Teaching Assistant: Michaela Allen, mallen43@leomail.tamuc.edu

Learning Assistants:

Information to be provided online

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Required Textbook(s)

21st Century Astronomy, 6th Edition with Smartwork5 Access by Kay, Palen & Blumenthal

Publisher website: <https://wnorton.com/books/9780393675498>

ISBN (Ebook+Smartwork+Student Site): 978-0-393-69124-5

The syllabus/schedule are subject to change.

Software Required

- Subscription to Smartwork5
- Registration to Remind (Free)

Other Required Materials

Headphones and microphone for listening to online videos and participating in online meetings

Important: *You WILL need access to Smartwork5.* New textbooks or ebooks come with Smartwork5 access. Used or rented books usually do NOT include access to Smartwork5. As of August 2020, Smartwork5 is available as a stand-alone purchase of \$30+tax for 360 day access.

Course Description

Hours: 3

A descriptive survey of astronomy with emphasis on modern developments in stellar and galactic astronomy and the role of physical science in the measurement and interpretation of astronomical data. Included are studies of structure and evolution of stars and galaxies and of current cosmological theories.

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.

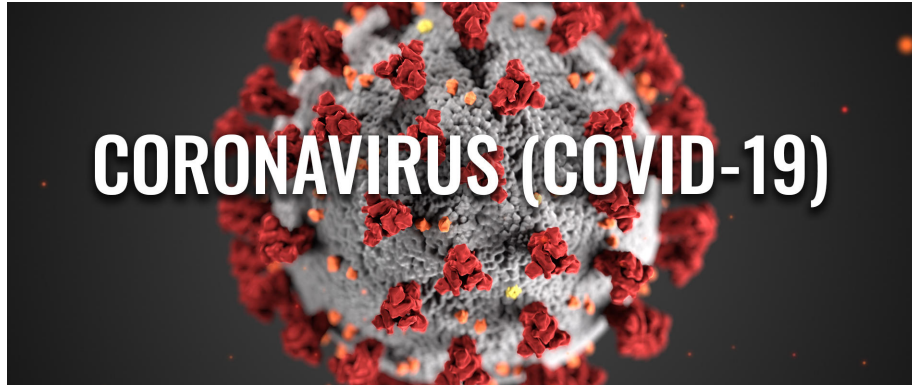
In this course, we will focus on studying stars and galaxies, as well as the natural laws and tools that astronomers use to study these distant objects. We'll begin by studying light, and telescopes. We'll then study the Sun as an example star and use it as a stepping stone to reach ever further into the Universe. Along the way we'll learn about the lives of 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 big topic we will not cover is our own Solar System, planetary systems around other stars, or extraterrestrial life. The Solar System (the 8 planets, asteroids, and comets) is covered in Astr 1304; other planetary systems and life is covered in Astr 120.

Student Learning Outcomes:

1. You will be able to explain the characteristics of stars and their life cycles.
2. You will be able to identify the classes of galaxies and their basic properties.
3. You will be able to state evidence supporting astronomers' explanations of the origin and fate of the Universe.

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COVID-19 (Coronavirus) is an ongoing public health crisis. It is a new virus that spreads very easily through the air, and it causes life-threatening complications for some people. Because many people can transmit the virus without symptoms, and because it isn't possible to know who is at risk for dying from a COVID infection, we all need to do our part to keep not just ourselves but each other safe.

Be COVID Safe Like Ricky the Rabid Raccoon!

- Wear a mask at all times!
- Wash your hands often!
- Keep everyone else at least 6 feet away!



Seriously!

In addition:

If you need extra time or accommodations on assignments due to COVID: Just ask Dr. Williams! The sooner you ask, the more flexible we can be. Please ask, even for something as simple as you need an extra day to do homework because you had to help your little brother learn how to do online homework for the umpteenth time because he can't get through his stupid little head how to enter his password.

If you are feeling stressed or depressed: first, know you are not alone! Many people, including Dr. Williams, are struggling with anxiety, depression, and other mental ailments because of the pandemic. Mental and emotional struggles are normal in times of constant stress, no matter what anyone else may tell you. **FREE HELP IS AVAILABLE;** contact the [University Counseling Center](https://new.tamuc.edu/counseling-center/) at 903-886-5145 or visit their website: <https://new.tamuc.edu/counseling-center/>.

Official University Policy:

A&M-Commerce requires the use of face-coverings in all instructional and research classrooms/laboratories. Exceptions may be made by faculty where warranted. Faculty have management over their classrooms. Students not using face-coverings can be required to leave class. Repetitive refusal to comply can be reported to the Office of Students' Rights and Responsibilities as a violation of the student Code of Conduct.

The syllabus/schedule are subject to change.

Slow the Spread of COVID-19

WASH YOUR HANDS OFTEN

20 SECONDS

WHEN OUT WITH YOUR FRIENDS, WEAR A CLOTH FACE COVERING

AND STAY 6 FEET APART FROM OTHERS

CLEAN FREQUENTLY TOUCHED OBJECTS

DO NOT TOUCH YOUR EYES, NOSE, AND MOUTH

COVER YOUR COUGHS AND SNEEZES

STAY HOME IF YOU ARE SICK

60% ALCOHOL

CDC

cdc.gov/coronavirus

CS18114-A, 01/28/2023

Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments.

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COURSE REQUIREMENTS

Minimal Technical Skills Needed

You will need to be able to access myLEO Online (also called D2L or Brightspace) and be able to learn how to use it. You should also be able to read PDF documents. You should be able to create either Microsoft Word documents (.docx) or plain text files. You must be familiar with Internet usage and safe browsing. You need to be able to watch YouTube videos on a computer.

How To Get Started

myLEO Online Access Information

This course uses myLEO Online, the learning management system at A&M-Commerce. All materials, assignments, and resources will be made available through this system. To access this course, go to: <http://myleoonline.tamuc.edu>. Log in with your myLEO account and password. Then click on the link to Fall 2020 – Stars and the Universe to get to our course.

How This Course Is Organized

This course is organized by weeks. We will be getting reading and video assignments every Tuesday and Thursday, with online homework assignments coming at the end of each chapter. Be sure to keep up with the assignment and class calendar on myLeo Online. You should check the course page on myLeo Online 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 myLeo Online and familiarize yourself with the resources. Next, order the course materials if you haven't yet. Finally, begin complete the activities and assignments under "August 24-28." Due dates are specified on myLeo Online.

Remind Text Messaging

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 subscribe to this service.

To register for text (SMS) updates, text "@astr1303" (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 email copies of any texts, such as if you don't have texting or don't want to pay for the messages, send a blank email to: astr1303@mail.remind.com. The service is also private: nobody (including myself) will see your phone number or email, and only I can send messages to you.

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Instructional Methods

Participation

One of the toughest things for students in online classes is keeping up with the work. It's easy to forget a class when you don't have to show up in person twice a week!

In order to give you some encouragement to log on to the class and keep up with the work, I will be assigning some reading, easy quizzes based on the reading, and video watching to be due up to three times a week, on Sundays, Tuesdays and Thursdays. For each assignment you finish on time, you will get a participation point.

For videos and reading, you just have to mark the assignment as finished and you will get credit. For quizzes, you will get a full point *just for finishing the quiz*. You will earn extra credit for each quiz question you answer correctly.

Most important: Don't forget to mark your reading and video watching as complete when you do it! If you are more than a couple of days late in finishing a reading or video assignment, you will get a zero.

Exams

Short exams will be given roughly every two or three week during the semester. These exams will focus on material covered since the previous exam. Your lowest exam grade will be dropped during grade calculations. There will also be a cumulative final exam; the final exam cannot be dropped.

The exams will be fully online. You will have a couple of days in which to complete each exam; these dates will be announced. Each exam is timed, but most students don't have any problems completing exams in the time given.

All exams are "open book," meaning you can use the book, your notes, the internet, and any other non-interactive resources. The only thing you cannot do is to use interaction with another human to help you get the right answers. "Interaction" includes talking with people, texting people, posting questions to internet forums like reddit, Chegg, Quora, Yahoo! Answers. Interaction also includes passing handwritten notes, showing each other screenshots, sending answers through email or snail mail, telepathy, and so on.

In short, do the exam alone. Most students do well enough on the exams that they get decent course grades, and if you bomb one exam, it'll get dropped in grade calculations.

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

Homework, aka Smartwork5

Smartwork5 is an online astronomy homework and tutoring tool. Its advantages are that Smartwork5 will give you instant feedback on whether you got a question right or wrong

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and provide you with hints and tools to better learn the material.

I call Smartwork5 assignments “homework;” each unit in a course will have its own Smartwork5 assignment. This means you should expect to see roughly one Smartwork5 assignments each week. If you do the homework and find you still don’t understand something, you definitely want to ask me about that topic in office hours, Remind chat, or by email.

The grading policy for each Smartwork5 assignment is shown in each assignment. You may get multiple attempts to answer a question correctly; however, submitting an incorrect answer will cost you some credit. Late homework is penalized 10% per day up to 7 days beyond the due date. After 7 days, you will receive a zero on the assignment. Any work not completed by the start of the final exam will also receive a zero.

Extra Credit:

The *only* extra credit available in this course are points for getting quiz questions correct and for attending virtual classes; these are added into your participation portion of the grade. The total available extra credit adds up to 2% of your total course grade. So, if you would’ve had a 78.1% without extra credit but you earn every possible extra point, your grade would be an 80.1%.

Virtual Classes:

Every Tuesday and Thursday from 2:00-2:45, Dr. Williams will hold virtual class sessions through the You-See-U application in our myLeo Online course shell. If you cannot attend these virtual sessions, they will be recorded and the videos posted in our course. However, you will receive a tad of extra credit for joining into live sessions.

During the live sessions we will focus on activities and tutorials to help you understand some of the tougher topics we cover in the course. There will also be some time for live Q&A and any important course announcements.

Student Responsibilities and Tips for Success in the Course

Students who do well in this course share most of the following common habits:

- Participating in live class sessions as often as possible.
- Checking myLeo Online often for announcements and assignments
- Completing all assignments on time
- Asking for help and advice early and often.
- Taking responsibility for their own grade.

GRADING

Final grades in this course will be based on the following scale:

The syllabus/schedule are subject to change.

A = 90%-100%
B = 80%-89%
C = 70%-79%
D = 60%-69%
F = 59% or Below

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 are available through the gradebook on myLEO Online – look for “Total Calculated Grade.” The gradebook on Smartwork5 is not official.

Grades are based on a weighted system. The categories and weights are:

Participation: 15%
Exams: 50%
 Bi-weekly Exams: 30%
 Final Exam: 20%
Homework Assignments: 35%

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

<https://documentation.brightspace.com/EN/brightspace/requirements/all/browsersupport.htm>

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

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Note: Personal computer and internet connection 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, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

Interaction with Instructor Statement

Email:

I can be reached by email at Kurtis.Williams@tamuc.edu. Please put "Stars and the Universe" 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.

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 "@astr1303" (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: astr1303@mail.remind.com. The service is also private: nobody (including myself) will see your phone number or email, and I am the only person who can send you messages.

Office Hours: Office hours are available in both real-world and virtual formats. 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.

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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 opportunities, come by.

Office hours work best if you have your textbook, 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 (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 at that instant.

Social Media:

Please don't follow me on social media until after you've graduated. You'll be disappointed anyway.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

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

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homework, and so on.

- **Searching the Internet for homework solutions and entering answers 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 A&M-Commerce website for “academic integrity policy”.

Smartwork5 and myLeo Online 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 answers. I will use these tools.

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 posted in the myLeo Online course calendar for each assignment. Submission requirements for each assignment will also be given on that page.

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Dropping the Course

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

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 a myLEO Online course for two weeks following the final day of term.

Late Work

Late assignments are penalized 10% for each day late (including weekends). After 7 days, late assignments will receive a zero. Exams may only be taken late by arrangement with the instructor, otherwise missed exams will receive a zero. The instructor has final discretion on whether to give a make-up exam. All work must be finished by the end of the day on the last day of classes.

Technical Issues

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, many restaurants, Interstate Rest Areas, etc.

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.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx).
<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:

<https://www.britannica.com/topic/netiquette>

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TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Students with Disabilities-- 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

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

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

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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.

Campus Concealed Carry Statement

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 the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

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.

Sexual Harassment and Violence

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 is a victim of harassment, stalking, domestic violence, sexual assault, or related crimes, has been harassed or assaulted, here are some resources for you:

Campus Resources

- **Call 911 in emergency situations**
- Victim Advocacy and Support:
<http://www.tamuc.edu/CampusLife/DeanOfStudents/Student Case Management/Victim Advocacy and Support/default.aspx>
- How to Help and Report:
<http://www.tamuc.edu/CampusLife/DeanOfStudents/Student Case Management/Victim Advocacy and Support/Victim Advocacy and Support.aspx>
- How to Report a Concern:
<http://www.tamuc.edu/CampusLife/DeanOfStudents/Student Case Management/Report a concern.aspx>

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- University Title IX Compliance Office:
<http://www.tamuc.edu/aboutus/administrativeoffices/president/compliance/TitleIX/default.aspx>
- University Title IX Contact: Michael Hill, 903-468-3104, Michael.Hill@tamuc.edu
- University Police Department Sexual Assault pages:
<http://www.tamuc.edu/campuslife/campusServices/universityPoliceDepartment/crimePrevention/sexualAssault.aspx>
- University Counseling Center: <https://new.tamuc.edu/counseling-center/>
- Campus police email: <mailto:upd@tamuc.edu>

External resources:

Crisis center of NorthEast Texas: <http://www.ccnetx.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: <http://changingourcampus.org/about-us/not-alone/>

COURSE OUTLINE / CALENDAR

The course will cover many of the topics outlined below. Due dates will be announced on myLeo Online and may change, so pay attention to announcements for final due dates.

- Unit 1: Thinking Like an Astronomer
- Unit 2: Light and Telescopes
- Unit 3: Measuring Stars
- Unit 4: Properties of Stars
- Unit 5: Our Star – the Sun
- Unit 6: Star Formation
- Unit 7: The Life and Death of Low-Mass Stars
- Unit 8: The Life and Death of High-Mass Stars
- Unit 9: Black Holes
- Unit 10: Galaxies
- Unit 11: The Milky Way
- Unit 12: The Expanding Universe
- Unit 13: Cosmology
- Unit 14: Large Scale Structure

FINAL EXAM DUE THURSDAY DEC 10

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