



ASTR 1303.01E – Stars & The Universe COURSE SYLLABUS: Spring 2018

WHO I AM

Instructor: Dr. Kurtis A. Williams, Associate Professor

Office Location: Science 145

Office Phone: 903-886-5516

Office Fax: 903-886-5480

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 1:00 p.m. – 1:50 p.m. in Science 127

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

Please include “Stars” in the subject line.

Preferred Form of Communication: Email or Remind Chat

Response Time: 24 hours on business days

WHAT THIS COURSE IS ABOUT

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 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.
4. You will be able to evaluate statements about astronomy using the scientific method.

WHAT YOU ABSOLUTELY NEED

Materials – Textbooks, Software and Additional Reading:

Required:

- 21st Century Astronomy, 5th edition, by Kay, Palen, & Blumenthal
- A subscription to Smartwork5, an online astronomy homework and tutoring system (see more below; this might come included with your textbook)
- Lecture-Tutorials for Introductory Astronomy, 3rd Edition, by Prather, Slater, Adams, & Brissenden
- A computer on which you can access the internet

Suggested:

- Headphones for listening to online videos

Options for the textbook:

Important: You WILL need access to Smartwork5. Used or rented books usually do NOT include access to SmartWork. As of December 2017, beta access to Smartwork5 was being offered free of charge for 360 days, but this may not continue. Nominally Smartwork5 access alone will be an additional cost of \$35 + tax for 180 day access.

- Be sure to order the 5th Edition; there is an older edition on some websites and in the bookstore, but chapter numbers and SmartWork5 access are different.
- 21st Century Astronomy loose-leaf edition with SmartWork5 and eBook access
 - From TAMU-C Bookstore: \$113.75
- 21st Century Astronomy eBook with Smartwork5 access (no hard copy)
 - Best if you are sure you are happy with eBooks; 360 day access
 - From TAMU-C Bookstore: \$97.25
 - From digital.wwnorton.com/astro5: \$70.00+tax

Course Prerequisites: None

NEW ONLINE COURSE MANAGEMENT SYSTEM: BETA COURSE NOTIFICATION

This course will use the **new** online course system called **myLEO Online**, which is powered by D2L's Brightspace. This course is one of a select few that will be hosted in the new system. This course is part of a "Beta" session that will occur in the live term. Instructors for these courses have been thoroughly trained and students enrolled in these courses will complete work in the new online course system.

Disclaimer: The majority of online courses will still be hosted in the older eCollege learning management system, so it is possible that if you take more than one online course, you will be using two different systems.

If you have registered in one of the beta courses you can access a preview at the login page: <https://myleoonline.tamuc.edu/d2l/login>

Use the same credentials you would use to login to the Leo Portal, such as CWID and password. Enrollment in the new online learning system is not automatic. We are creating student accounts on a regular basis. If you are enrolled in one of the below courses and are not yet able to login to the new system, please e-mail ProjectNova@tamuc.edu with your full name, CWID, and Beta course in which you are enrolled.

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 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 Unit 1. Due dates are specified on MyLEO Online.

Smartwork5 Access Information

Homework must be completed using Smartwork5, <https://digital.wwnorton.com/astro5>[†]. You are required to purchase a subscription to this site; an access code for a 360 day subscription comes included with any new textbook available through the bookstore, or it can be purchased separately from the Smartwork5 website. Our Student Set ID, which you need during registration, will be announced in class. You can watch a video showing you how to register at: <http://bit.ly/nortonregistration>

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.

Therefore, 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 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. There is no penalty if you get an answer wrong, but correct answers may receive a small amount of extra credit.

One tool will be used commonly in our lectures: the required *Lecture Tutorials for Introductory 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, I have the option of giving you a 0 for that day's participation.

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

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 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 final, you will need to bring a pencil and a scantron sheet. You may also bring a single 4x6 handwritten note card 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 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 for each unit. We will be using Smartwork5, an online astronomy homework and tutoring tool, for most homework assignments. Smartwork5 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. Occasional assignments outside of Smartwork5 may also be made.

Assignments will be announced in class and due dates will be clearly specified. The grading policy for each Smartwork5 assignment will be shown with each assignment. You may get multiple attempts to answer a question correctly; however, submitting an incorrect answer will cost you some credit. 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.

Labs

Labs are a separate class (Astr 1103); you do not need to be enrolled in a laboratory section to earn credit in this course. You should speak with your academic advisor to determine if signing up for a lab section is right for your degree plan. You can also take the lab courses in future semesters; they do not need to be taken concurrently. At the present, we do not offer online labs for astronomy.

Mini-Lectures

Within each unit, I will upload mini-lectures that you will be able to view. These videos are approximately 15 minutes each and will focus on one or two important points each. These videos may be assigned as part of pre-class preparation, but they will not replace your class attendance requirements. *Not all topics that are on homework assignments or on exams are covered in the minilectures.*

Quizzes

Quizzes will be given often at the start of a class to see if you have done the assigned reading and pre-class preparation. These quizzes are short and cover basic material, like definitions, facts in section headings, and end-of-chapter summaries. If you are tardy, you don't get to take it late.

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 MyLEO Online. Any other gradebooks are *not* official.

Grading is weighted by assignment using the following weights:

Assignment Type:	Weight:
Classroom Participation	15%
Reading Quizzes	10%
Homework Assignments	35%
Midterms	20% (10% each)
Final Exam	20%

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

Extra Credit

The *only* extra credit available in this course are the two options below. If you fully complete one of the options, you will earn 2% extra credit added to your course grade. You may do multiple activities, but you will only earn extra credit for one. There are no other options for extra credit. **All extra credit must be completed on or before Friday, April 27.**

Visit the Commerce Observatory: If you live on campus or close to Commerce, you will have two opportunities for a visit to the Commerce Observatory (about 5 miles south of Commerce). On two evenings (dates TBA), we will have telescopes set up to look at planets and other interesting objects in the night sky. At each session, there will be an activity you must complete in order to earn extra credit. One visit is sufficient.

Visit a planetarium show: The A&M-Commerce Planetarium exhibits several different shows every Friday night at 7pm and 8pm. Tickets are \$4 for children and university students (with ID), \$4.50 for senior citizens, and \$5 for adults. <http://www.tamuc.edu/planetarium/>[†] has a current listing of shows. Family of any age is welcome to the planetarium shows; be sure to check on the age-appropriateness of shows (all are rated appropriate for all audiences, but typically the 7pm show is aimed at children and the 8pm show at teens and adults). The Rock & Roll Hall of Fame show doesn't count.

If you attend a show, tell the staff that you are a member of this class both when you enter the planetarium and when you leave. They will make a note that you attended.

TECHNOLOGY YOU WILL NEED

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 method. 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, SmartWork homeworks are untimed. 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 real or virtual hours, or make an appointment with me if none of those times work.
 - Go to the JAMP room (Science 110). JAMP offers peer counselling and tutoring in many of the sciences; look for times when a physics tutor is available.
 - 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 MyLEO Online (D2L):

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 D2L (myLEO Online):

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

1. Students must report the problem to the Project Nova help desk. You may reach the helpdesk by email at ProjectNova@tamuc.edu. Be sure to copy (cc:) Dr. Williams in the same email at Kurtis.Williams@tamuc.edu
2. In your email, include your full name, CWID, the name of this course (Astr 1303.01E – Stars and the Universe), and a description of the problem.
3. Students **MUST** file their problem with the Project Nova help desk and Dr. Williams in order to receive extra time!
4. Once the problem is resolved, I will follow up with you.

PLEASE NOTE: Your personal computer/access problems are not a legitimate excuse for filing a ticket with the myLEO Online Help Desk. You are strongly encouraged to check for compatibility of your browser **BEFORE** the course begins and to take the myLEO Online tutorial offered for students who may require some extra assistance in navigating the myLEO Online platform. **ONLY** myLEO Online based problems are legitimate.

Do NOT contact me for D2L problems without first taking the above steps. I'll just tell you to take the above steps

If your problems are with Smartwork5:

- If you are having trouble joining the class, see the “Joining Smartwork5” link in the D2L menu bar and the links on that page.
 - The most common problem is that you are confusing your access code, which comes with your book or your online purchase, and the Student Set ID
- If you are having other problems, go to the Smartwork5 student support page at <http://books.wwnorton.com/books/buysmartwork>[†].
- Please do both of the above before emailing me with any problems.

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 Stars” 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:

MyLEO Online has a reminder service that permits you to receive class announcement and important reminders for due dates and other class events. You can set this up to send you these reminders by your preferred method (text, email, etc.) I expect you to make use of this service.

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 textbooks, class notes, and lecture tutorials 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".

SmartWork and LearningStudio 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

All assignments will be posted at least one week before they are due. Assignments and due dates will be posted 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.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: <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 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), 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/rulesProcedure/s/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>^f 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 (never earlier, but possibly later) so pay attention to announcements for final due dates.

1st Block: Tools of the Astronomer

- Unit 1: Introductions (Jan 17)
- Unit 2: Thinking Like an Astronomer (Jan 19-Jan 24)
- Unit 3: Electromagnetic Radiation (Jan 26-Jan 31)
- Unit 4: Size, Temperature and Motion (Feb 2-Feb 9)
- Unit 5: Telescopes (Feb 12-Feb 16)
- **Midterm 1: February 26 During Class**

2nd Block: Stars

- Unit 6: Taking the Measure of Stars (Feb 19-Mar 2)
- Unit 7: Our Star – The Sun (Mar 5-Mar 9)
- *Spring Break: March 12-March 18*
- Unit 8: Stellar Evolution (Mar 19-Mar 28)
- Unit 9: Stellar Death (Mar 30-Apr 9)
- **Midterm 2: April 16 During Class**

3rd Block: Galaxies and the Universe

- Unit 10: The Milky Way and its Neighbors (Apr 11-Apr 20)
- Unit 11: The Expanding Universe (Apr 23-Apr 27)
- Unit 12: The Big Bang (Apr 30-May 4)
- **Final Exam Friday May 11 10:30-12:30**

All extra credit must be completed by Friday April 27.

Observatory Visits:

- TBA