ASTR 1304.01E Astronomy of the Solar System

COURSE SYLLABUS: Fall 2024

Class Location: MWF 2:00 PM - 2:50 PM, McFarland Science Building 127

INSTRUCTOR INFORMATION

Instructor: Dr. Billy Quarles, Assistant Professor
Office Location: Room 145, McFarland Science Building
Student Hours: MWF 11:00am-Noon; TR: 2-3 pm; by appointment
University Email Address: Billy.Quarles@tamuc.edu
Preferred Form of Communication: email or Slack
Communication Response Time: Before the end of the following business day

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required

21st Century Astronomy, 7th Edition with Smartwork5 Access by Kay, Palen & Blumenthal

Publisher website: https://wwnorton.com/books/9780393877021

Ebook + SmartWork5 access starts at $65 if purchased through this link.

Software Required

- Subscription to Smartwork5
- Slack (Free)

***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 December 2023, Smartwork5 is available as a stand-alone purchase of $40+tax for 360 day access.

The *syllabus/schedule are subject to change.*

Course Description

Hours: 3
A descriptive survey of the solar system specifically including the sun, planets and their satellites, comets, and other members of the solar system. The course will also examine the history of astronomy and the development of scientific tools for understanding the nature of the Solar System.

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 the Sun and its accompanying collection of planets, comets, asteroids, and other debris. We'll begin by studying the night sky and the history of astronomy. From the insights we gain in these topics, we will step out and study our Solar System. Along the way we will find ice volcanoes, temperatures ranging from near absolute zero to hot enough to melt lead, and potential places for life.

This course will not cover stars, cosmology, or extraterrestrial life. Stars and cosmology are covered in ASTR 1303; extraterrestrial life is covered in ASTR 120.

Student Learning Outcomes

1. You will be able to explain how astronomers determined the true size, layout, and forces at play in our Solar System.
2. You will be able to compare the properties of different objects in our Solar System.
3. You will be able to restate hypotheses concerning the origins of our Solar System.
4. You will be able to identify major bodies in the Solar System from pictures.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

You will need to be able to access myLeo Online, the new learning management system, 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. You need to be able to scan a QR code using your smartphone and complete a Google Form.

How This Course Is Organized

This course is organized to complete a chapter of material over ~3 class meetings. Some chapters may be 2 or 4 class meetings. You should listen in class, check the course page on MyLeo Online, or the Google Calendar often to see which chapters/sections we will be covering each class meeting and/or the assignments that 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.
- order the course materials if you haven't yet.
- join the Slack Workspace.

Slack Workspace

I have set up a Slack workspace for this class. This service lets you get announcements from Dr. Quarles and send him messages. Slack is similar to Discord, but it is often used in a more professional setting. I urge you to use this service, where you can have 1:1 and group messaging. The invite link to the Slack Workspace is available on myLeo Online.

Slack is free, where your messages are only visible for 90 days. Slack is private; only Dr. Quarles will see your ***direct*** messages. Comments on the public channels are visible to everyone, where you can reply to comments as a thread (*please use threads*). **The Slack channels are a place for communication and collaboration, not mischief.** This will also be a place for me to post random things happening in astronomy that you may find interesting.

Instructional Methods

Participation and Quizzes

To give you an incentive to attend class and keep up with the work, I will encourage in-class discussion of certain topics. At the end of each class, you will scan a QR code and complete a short quiz over some of the information covered in the lecture. The general quiz results will be viewable the day after class using the same QR code that you can find in the PowerPoint slides on myLeo Online. **You will receive full credit for completing the quiz, where the only way for your quiz grade to decrease is not showing up to class.**

Exams

Short exams will be given four times during the semester. These exams will focus on material covered since the previous exam. *There will also be a cumulative final exam, which will replace your lowest exam grade.* You may choose to skip the final exam or take it to improve your overall course grade. If you bomb or miss an exam, then the final exam is your shot at redemption. Use it wisely.

The *syllabus/schedule are subject to change.*

Makeup exams may only be taken under *extenuating* circumstances (e.g., a death in the family or a medical emergency), where you should email me so we both have a record. I will require official documentation of the reason for the absence, and I reserve the right to reject any excuse. Do everything in your power to be present for an exam. There is no makeup exam possible for the final exam.

For all exams, they will be administered in-class where you only need to bring a pencil or pen to fill out the provided answer sheet. No other books, backpacks, calculators, computers, iPods, headsets, cell phones, PDAs, tricorders, etc. will be permitted. Using any aids will result in you being removed from the exam and a grade of a zero.

If you are certified as needing special accommodation 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 and provide you with hints and tools to better learn the material.

I call Smartwork5 assignments "homework;" where each chapter in the course will have its own Smartwork5 assignment. This means you should expect to see roughly one Smartwork5 assignment each week. Most assignments typically take less than 1 hour to complete. 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, Slack DM, 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 late. After 7 days, you will receive a zero on the assignment.

The following are considered cheating and will not be tolerated. Directly copying text from a website (e.g., Quizlet) or other printed source, obtaining copies of solutions to homework questions (whether from past students or other sources), directly copying another student's work, etc. Generative AI such as Chat GPT must not be used unless a specific question clearly states otherwise. See the section on "Academic Integrity" below for full details.

Extra Credit:

Extra credit is available "a la carte" to give you an opportunity to enrich your learning experience in the course. The full details (conditions) for each extra credit opportunity can be found on myLeo Online. These opportunities are not indicative of the difficulty of the course. You may earn extra credit for each activity only once, unless otherwise

noted. There are no other options for extra credit. **All extra credit must be completed by 11:59pm on Friday, Dec 6.**

Book Review: Read (or listen to) a book from a popular non-fiction science writer. Most books of this type are inexpensive (<$20) and some are available as audiobooks that are read by the author. Completion of this review paper will add up to 2 points to your final grade.

Movie Review: Critically examine a popular science fiction movie (e.g., The Martian). Prepare a 4-page movie review discussing the good and bad science depicted in the film. Completion of this review paper will add up to 2 points to your final grade.

Video Interviews: You and a classmate will conduct interviews of TAMUC students (who are not enrolled in the class). Your interviews will be centered around a question about counterintuitive idea/topic that you learned in this course. These interviews must be edited together to produce one ~4-5 min video and submitted for credit as a YouTube link. You **and** your classmate will receive up to 3 points to both of your final grades.

Video Shorts: You will receive a bonus point on your lowest (non-dropped) exam for creating a 1-minute video explaining a homework question (maximum 10 videos/points) and submitted for credit as a YouTube link. This video will be shared on myLeo with the rest of the class.

Physical Art Project: You will create a piece of physical art (e.g., model, drawing, painting, sculpture) that illustrates/symbolizes a concept that you found interesting in the course. Completion of this project will add up to 3 points to your final grade.

Research Project: You will perform more in-depth research of a topic you found interesting in the course. At the conclusion of your deep-dive you must prepare a short video or 4-page paper summarizing your findings. Your summary must go beyond the material discussed in class and not just parrot it back. Completion of this project will add up to 3 points to your final grade.

Visit a planetarium show*:* The A&M-Commerce Planetarium exhibits several different shows every Friday night at 7 pm and 8 pm. Tickets are $5 for all ages. 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 is more appropriate for teens and adults).

If you attend a show, tell the staff that you are a member of this class. The staff will have class rosters; you are responsible for making sure the staff mark down that you attended. You will receive 1.5 points on your final grade.

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Visit the Commerce Observatory: You will have two opportunities for a visit to the Commerce Observatory (about 5 miles south of Commerce). On two evenings (dates to be announced), 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 to earn extra credit. One visit is sufficient. Times and transportation options will be announced closer to the event. You will receive 1.5 points on your final grade.

Student Responsibilities or Tips for Success in the Course

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

- Working on the course a little bit every day.
- Checking myLeo often for announcements and assignments
- Completing all assignments on time
- Asking for help and advice early in the semester
- Taking responsibility for their own grade.

GRADING

A letter grade is determined only at the end of the term. Course grades will be based on quizzes, homework assignments, and exams. Grades are based on a weighted system.

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 "Final Calculated Grade." The gradebook on Smartwork5 is ***not*** official.

Category	Weights
Quizzes	10%
Homework	30%
Exams I-IV	15% (each)
Final Exam	15%*

*Final is cumulative and replaces lowest exam grade

Grading Scale	
A	90 -- 100%
B	80 -- 89%
C	70 -- 79%
D	60 -- 69%
F	<60%

Overall Grade Calculation Example

Category	Score	Weight	Points
Quizzes	90	0.10	9.0
Homework	85	0.30	25.5
Exam I	65	0.15	9.8
Exam II	75	0.15	11.3
Exam III	0	0.15	0
Exam IV	88	0.15	13.2
Final Exam	80	0.15	12.0
Overall Grade			80.8

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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/browser_support.htm

Zoom Video Conferencing Tool
https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

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**.**

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

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Interaction with Instructor Statement

Email:
I can be reached by email at Billy.Quarles@tamuc.edu. Please put "Solar System" 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).

Slack Direct Message:
I can be reached via Slack Workspace. See above for details.

Student/office Hours: Student hours are available in both face-to-face and virtual formats. Student 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, no appointment needed. During student 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. **Note: you're paying to understand the material, get your money's worth.**

It's important to realize that student hours are *not* just for students who are having problems in the course. If you are uncertain about anything, please visit, email, 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. Student hours work best if you have your notes and a laptop or tablet from which we can access your textbook and homework.

If you want to talk but cannot come during office hours, please go to email me or DM me on Slack to schedule an appointment. We can schedule a time for you to speak to me face-to-face or by video conferencing.

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

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. *Your answers should not consist of only direct quotes.*
- **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 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.
    - The use of generative AI, such as Chat GPT, is only permitted when an assignment explicitly asks you to use it.
- **Borrowing another person's work** is considered cheating. "Borrowing" includes looking at someone's submitted homework, Smartwork accounts, graded exams, screen shots, etc. with or without their permission. "Another person" includes not only present and past students, but also anyone else who might have access to solutions.
- **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!

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".

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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 (called "administrative withdrawal), I won't do so. You have a right to get an F if you decide to quit working but don't drop the course.

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.

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% per day if turned in after the deadline. After 7 days, late assignments will receive a zero. Exams may only be taken late by arrangement and permission 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.
https://inside.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf.

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

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedures 13.99.99.R0.01
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

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
Undergraduate Student Academic Dishonesty Form

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf

Graduate Students Academic Integrity Policy and Form

Graduate Student Academic Dishonesty Form

https://inside.tamuc.edu/aboutus/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10.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
Velma K. Waters Library Rm 162

The *syllabus/schedule are subject to change.*

Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu

Website: Student Disability Services

https://www.tamuc.edu/student-disability-services/

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.

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.

AI use policy

[Draft 2, May 25, 2023]

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism). Individual instructors may disallow entirely the use of such software for individual assignments or for the entire

course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty
13.99.99.R0.10 Graduate Student Academic Dishonesty

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit **www.tamuc.edu/counsel**

Mental Health and Well-Being

The university aims to provide students with essential knowledge and tools to understand and support mental health. As part of our commitment to your well-being, we offer access to Telus Health, a service available 24/7/365 via chat, phone, or webinar. Scan the QR code to download the app and explore the resources available to you for guidance and support whenever you need it.

http://telusproduction.com/app/5108.html

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 due dates. See the Google Calendar for exact dates.

Week(s)	Chapter(s)	Topic(s)
1-2	1	Thinking Like an Astronomer
2-3	2	Patterns in the Sky
3-4	3	Motion of Astronomical Bodies
4		**Exam I (Friday, 9/20)**
5	4	Gravity and Orbits
6	5	Light
7	6	The Tools of the Astronomer
8		**Exam II (Monday, 10/14)**
8-9	7	The Formation of Planetary Systems
9-10	8	The Terrestrial Planets and Earth's Moon
10-11	9	Atmospheres of the Terrestrial Planets
11		**Exam III (Friday, 11/8)**
12	10	Worlds of Gas and Liquid – the Giant Planets
13	11	Planetary Moons and Rings
14		**Thanksgiving Break**
14-15	12	Dwarf Planets and Small Solar System Bodies
15		**Exam IV (Wednesday, 12/4)**
16		**Final Exam (Monday, 12/9 @ 1:15pm)**

Important Class Dates:

- Aug 26: First Day of Class
- Sept 2: **No Class** (Labor Day)
- Oct 18 **No Class**
- Nov 27-29: **No Classes** (Thanksgiving Break)
- Dec 6: Last day to complete any extra credit
- Dec 6: **Last Day of Class**

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