

ASTR 120.01W Life in the Universe

COURSE SYLLABUS: Summer 2025



INSTRUCTOR INFORMATION

Instructor: Dr. Billy Quarles, Assistant Professor

Office Location: Room 145, McFarland Science Building

Office Hours: **MWF 10-11am; TR: 2-3 pm; by appointment**

University Email Address: Billy.Quarles@etamu.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

Life in the Universe, 5th Edition by Bennett, Shostak, Schneider & MacGregor

Publisher website: <https://press.princeton.edu/books/paperback/9780691241784/life-in-the-universe-5th-edition>

Courseware access will not be used or needed.

Software Required

- Slack (*Free*)

Course Description

Hours: 3

The basic science of the search for evidence of life in the universe, including the origin and evolution of life on the Earth, terrestrial extremophiles, the history of the search for life in the Universe, the search for habitable environments in the Solar System, and the search for habitable (exo-)planets and signs of life around other stars.

Are we alone in the Universe? In the 1500s, the Catholic Church executed a monk who dared to suggest the presence of other intelligent species living on other worlds, yet over the past century, popular culture has become littered with discussions of space faring civilizations being commonplace. But is life common? Is intelligent life common? What is intelligence, anyway? What is life?

Since the discovery of the first planets outside our Solar System in the mid 1990s, the science of astrobiology has grown by leaps and bounds. It is a very broad field that attempts to bridge biology, chemistry, geology, physics and astronomy under one monumental goal: the discovery of life elsewhere in the Universe.

In this course, we will explore the field of astrobiology. We will look at the necessary ingredients for life. We will learn about possible habitats for life in our own Solar System. We will explore how astronomers discover and study planetary systems around other stars. And we will end by discussing the probability of other civilizations in the Universe and how we might find them.

Student Learning Outcomes

1. You will discuss the chemistry and origins of life on Earth.
2. You will employ knowledge of current and past life on Earth to identify criteria for habitability and life.
3. You will identify potential habitats in our Solar System.
4. You will calculate individual terms of the Drake Equation to estimate the number of intelligent civilizations in our galaxy.

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/or complete a Google Form.

How This Course Is Organized

This course is organized for you to complete a chapter of material over ~2-3 hours per week. You should listen to the lecture videos and check the course page on MyLeo Online often to see which chapters/sections we will be covering each week 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

Discussion and Quizzes

To give you an incentive to engage with the class and keep up with the work, I will encourage in-class discussion of certain topics. After viewing each lecture video you will complete a short quiz on myLeo Online over some of the information covered in the lecture. **You will receive full credit for completing the quiz, where the only way for your quiz grade to decrease is not to complete it.**

Each week you will complete three discussion posts that will have the following themes:

1. **Ask your peers a question:** In this post, you will ask a question and reply to another student's question with constructive criticism.
2. **Answer an in-depth concept question:** In this post you will choose 1 topic question to answer, where you will post your answer and critique the response of your peers.
3. **Ask your instructor a question:** In this post, you will have an opportunity to ask the instructor any question you have concerning a topic within the unit.

The post will be evaluated using the following rubric:

Category	Points	Description
Initial Post	4	Clearly explains course concepts with original reasoning or examples.
Peer Reply	3	Responds meaningfully to a classmate's post with a question, clarification, or insight.
Effort & Clarity	2	Posts are well-written, organized, and show thoughtful effort.
Deadline	1	Initial post submitted by mid-week so others have a chance to reply.

Further details concerning the criteria for each grading category are available for review on myLeo Online. **AI Use Policy:** Posts must reflect your own thinking. Content generated entirely by AI (e.g., ChatGPT) will earn **zero credit** unless it is clearly revised, meaningfully expanded, and clearly documented.

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.

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.

The tests are timed and may only be taken once, and you will need to study the material well before taking the exam. The tests are not officially cumulative, but astronomy is a very intertwined science, and topics covered Chapter 5 may be needed to answer questions about Chapter 13.

- You must work on the exam alone – you may not discuss the exam with other students prior to the due date, you may not use any sort of communication like email, Zoom, texting, Chat GPT or other generative AI, Discord, talking, writing, semaphore, etc., etc., etc. to communicate with any other human during or after the exam.

Homework

Homework is assigned through myLeo Online, where you will complete ~8 written response questions for each assignment. For each homework assignment, your primary goal for all questions is to provide **thoughtful, thorough, and well-supported answers**.

AI-Assisted Feedback and Revision Requirement: To help you develop skills in revising your work and using feedback tools, **for at least two (2) questions on each assignment, you are required to use an AI-assisted feedback model**. For these selected questions, you must:

1. Write your initial response.
2. Obtain feedback on your response from an AI tool.
3. Critically evaluate the AI feedback and then revise your initial response.
4. When submitting your assignment, clearly indicate which questions you used this process for. For these questions, you will need to present your initial response, a copy of the substantive AI feedback you received, and your final revised response. (Further instructions on formatting this will be provided).

For the remaining questions on the assignment, you should submit your single, best well-developed response. While you are not required to document the AI feedback process for these other questions, you are encouraged to apply similar principles of critical thinking and revision as you draft your answers.

The due date for each unit (3 assignments) is ~1 week apart. **Late homework is penalized 10% per day late. After 3 days, you will receive a zero on the assignments.**

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. **Suspected use of generative AI (such as ChatGPT) that**

is undocumented and submitted as original work. See the section on “Academic Integrity” for full details.

Most written responses will be graded on a 10-point scale. The general criteria are summarized in the table below. For the complete, detailed rubric breakdowns for each point level, please refer to myLeo Online.

Score Range	Performance Level	Summary of Expectations (Content & Writing)
9-10 pts	Excellent	Demonstrates a thorough and nuanced understanding. Content is comprehensive, accurate, insightful, and well-supported. Writing is exceptionally clear, concise, well-organized, and mechanically sound. Critically examined and applied AI-assisted feedback, where applicable.
7-8 pts	Good	Demonstrates a good understanding. Content is mostly accurate and covers major points effectively. Writing is clear, generally well-organized, with few, if any, minor mechanical errors.
5-6 pts	Satisfactory	Demonstrates a basic understanding. Content addresses main points but may be superficial, contain some inaccuracies, or have omissions. Writing is adequate and generally understandable but may have some issues with clarity, organization, or mechanical errors.
3-4 pts	Needs Significant Improvement	Demonstrates limited or flawed understanding. Content is partially correct, misses multiple major points, or has significant inaccuracies. Writing is unclear, poorly organized, or contains frequent errors; response may be underdeveloped.
1-2 pts	Unsatisfactory	Demonstrates a fundamental lack of understanding. Content is largely incorrect, irrelevant, or minimal. Writing is very poor and may be incomprehensible.
0 pts	No Credit	No response; the response is entirely off-topic; or response for a standard question is identified as being primarily AI-generated and submitted as original work (this may also be subject to institutional academic integrity review).

Specific Grading for AI-Assisted Questions:

For the required (at least) two questions per assignment where you will use the AI-assisted feedback and revision process, the same rubric will mostly apply. Your final score will be modified by the quality of your:

1. **engagement with the AI feedback and revision process** (e.g., your initial response, critical use of AI suggestions, and the thoughtfulness of your revisions).
2. **final revised answer.**

You can lose up to 5 points for responses that do not critically examine the AI-assisted feedback or up to 10 points for failing to supply the required minimum number of questions.

Please consult the detailed rubrics for both standard questions and AI-assisted questions on myLeo Online to fully understand all assessment criteria.

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 July 2.**

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 will add up to 3 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 will add up to 3 points to your final grade.**

Video Interviews: You and a classmate will conduct interviews of ETAMU 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 by email 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.

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.**”

Category	Weights
Quizzes	10%
Discussion	20%
Homework	30%
Exams I-IV	10% (each)
Final Exam	10%*

*Final is cumulative and replaces lowest

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
Discussion	90	0.2	18.0
Homework	85	0.30	25.5
Exam I	65	0.10	6.5
Exam II	75	0.10	7.5
Exam III	0	0.10	0
Exam IV	88	0.10	8.8
Final Exam	90	0.10	9.0
Overall Grade			84.3

TECHNOLOGY REQUIREMENTS

LMS

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

[LMS Requirements](#)

[LMS Browser Support](#)

[Zoom Video Conferencing Tool](#)

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 ETAMU 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 Billy.Quarles@tamuc.edu. 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.

Office Hours: Office 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. **Since this is a fully online course, I realize it is likely not convenient for you to come to my real-world office, so feel free to use email for these same purposes any time of day.** Note: you're paying to understand the material, get your money's worth.

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 course and most others 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 [ETAMU Code of Student Conduct](#) and the ETAMU 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 ChatGPT, 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 East Texas A&M University website for “academic integrity policy”. myLeo Online provides 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. 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 3 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](#).

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>

ETAMU Attendance

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

Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all 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](#)

Graduate Students Academic Integrity Policy and Form

[Graduate Student Academic Dishonesty Form](#)

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 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

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

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Student Disability Services](#)

Nondiscrimination Notice

East Texas A&M University 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 East Texas A&M University 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 East Texas A&M University 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.

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M University campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

AI use policy

[Draft 2, May 25, 2023]

East Texas A&M University 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

East Texas A&M University Supports Students' Mental Health

The Counseling Center at East Texas A&M University, 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, or www.tamuc.edu/counsel for more information regarding Counseling Center events and confidential services.

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.



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. The week number and days you should spend give you a guide for pacing the course. **Note that you should allocate ~1.5 hours each day to complete the homework by the given deadline on myLeo Online.** Homework and discussion posts are due weekly

Week(s)	Days	Chapter(s)	Topic(s)
1	1.5	1	A Universe of Life
1	1.5	2	Science of Life in the Universe
1	1.5	3	Universal Context of Life
1	-	-	Exam I (Weekend, 6/7-6/8)
2	1.5	4	Habitability of Earth
2	1.5	5	Nature of Life on Earth
2	2	6	Origin and Evolution of Life on Earth
2	-	-	Exam II (Weekend, 6/14-6/15)
3	1.5	8	Mars
3	2	9	Life on Jovian Moons
3	1.5	10	Nature and Evolution of Habitability
3	-	-	Exam III (Weekend, 6/21-6/22)
4	2	10	Exoplanets
4	1.5	11	Search for Extraterrestrial Intelligence
4	1.5	12	Interstellar Travel & the Fermi Paradox
4	-	-	Exam IV (Weekend, 6/28-6/29)
5	-	1-12	Final Exam (7/1-7/3)

Important Class Dates:

- June 2: First Day of Class
- June 27: Last day to complete any extra credit
- July 2: **Last Day of Class**