

Syllabus For Astr 202

Welcome to Astronomy 202

Life in the Universe

Fall 2022, section 001, in-person

Professor: *Laird Close, office: N428 Steward Observatory,*

email lclose@arizona.edu

*when emailing please add **Astr 202** in the subject line*

Office hours: Monday & Wednesday noon-1 PM after class

TA: *Sawsan Wehbi, office Zoom*

Zoom link: <https://us04web.zoom.us/j/8093989180?pwd=ODVqS2c0YTdJMDlpK1R1MnRrc2Z3UT09>

Meeting ID: 809 398 9180

Passcode: 7xPRc2

email: sawsanwehbi@arizona.edu

Zoom hours by zoom Tuesdays and Thursdays 2-3 PM

Introduction to the Course

This course satisfies the Gen. Ed. Natural Sciences Tier 2 requirement and is intended for mainly non-science majors. But all are welcome!

In this course we will explore how the Universe, Sun, and Earth were formed. How the first life on Earth started. How this life evolved into complex multi-celled species. We will outline, what appear to be, the necessary conditions for life to exist and thrive. We will study where in our solar system there could be life. We will learn about other planets outside our solar system orbiting other stars. We will examine these new worlds for possible habitable zones for alien life. We will also estimate how likely it is that we could communicate with another intelligent civilization, and how such communication could be possible. We will also examine issues such as space travel, terraforming, and the evolution of civilizations. **The emphasis of the course is on understanding**, not on pure memorization.

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Background Preparation

Recommended Prerequisites: either Gen. Ed. Natural Sciences (NATS) 170 level (like Astr 170A, B, or C). Students that have not taken a tier 1 Gen-Ed science course might have difficulty with this material. Students that have taken Astr 170A or 170B “The Physical Universe” will be more familiar with some of the material in this course, but it is not required to take “The Physical Universe” before this course.

The concepts of simple geophysics, basic chemistry, and astronomy are fundamental to understanding the information presented in this course. *If you have not been exposed to these concepts before, you might wish to study them immediately in a general textbook like that used at the Gen Ed. Astr 170A1 or 170B1 or 170B2 level. You should also be familiar with very basic algebra, fractions, and scientific notation.* This course will also require frequent out of class work, as well as independent research. **A strong interest in the course material is the best prerequisite!** You should have a small inexpensive calculator at your disposal (one that does powers, roots, and trigonometric functions). *Please seek help in-class (or office hours) when you encounter a concept that you do not understand.*

Textbook: “Life in Our Universe”

The textbook for this course is the course guide for Professor Close’s [“Life in Our Universe”](#) course that also has a set of 24 high-quality streaming lectures (or on a set of DVDs). In the streaming “instant video” option the textbook is offered as a PDF for downloading, in the case of the DVDs it is a real hardcopy book.

I recommend for you the less expensive “instant video” option since most students don’t have easy access to DVD players.

However, if you like DVDs you can order the DVD set for ten dollars more.

Both the “instant video” or DVD options are available for purchase from the Great Courses website. *Students that are enrolled in Astr 202 can purchase the textbook and lectures at a much reduced (~70% off) rate – instructions on how to do this will be given first day of class.* You must order this textbook and lectures to attend this class.

These high-quality professional lectures will form the core lectures of the course. Students are expected to watch the relevant lecture and complete the (straightforward) lecture homework before coming into class. The homework is

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due at the very start of class (**no late homework will be accepted**). In this manner class time will be used to help you really learn the material at a deeper level with personal help “coaching” from the Professor and the TA during class time (unlike what is possible in your other large classes at the University of Arizona). This allows everyone to do better in this course than just a “classical” lecture class could allow. Students learn more interesting material in a, hopefully, enjoyable and entertaining manner.

Evaluation

Your grade in this course will strongly depend on your participation/attendance in class and doing the homework and quizzes. The exact breakdown is:

Observing/writing project (20%),
Monday and Wednesday homework exercises (20%),
Friday quizzes (20% in total),
Midterm exam 1 (20%),
Midterm exam 2 (20%).

Midterms/quizzes are closed book (but simple calculators can be used) and will consist of multiple-choice and short written answer questions. Your grades will be available always throughout the course on the "desire-to-learn" D2L server (logon from student link).

The final course grades these are slightly custom for this class:

≥90% of the total number of points available you will receive an A,
≥75% B,
≥60% C,
≥50% D,
below 50% an E.

Observing Project

The observing project will be detailed later in the semester.

The grades for this project will be based on individual effort. Students that use copied text in their work without quotations and proper citations will be given a grade of zero. Grades will be strongly based on the individual efforts, observing work, and individual report.

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Policies

- *Do your own work.* Modern science is collaborative, and people learn from talking to each other. Feel free to talk to the instructor, TA, or other students about homework assignments. But the work you turn in must be your own -- **don't ever copy assignments.** Copying is cheating and will be handled according to university policies. The instructor subscribes to the University's Code of Academic Integrity. The Code prohibits all forms of academic dishonesty, including cheating, plagiarism, and facilitating dishonesty by others. The repercussions for all of those found guilty of violating the Code will include loss of credit for the work (grade=0) and may include failure of the course or more extreme measures as needed.
- *Attendance, participation, and conduct.* Attendance and participation in class is an important part of your class grade. **Students who are absent will have difficulty passing this course -- attendance of all the classes is critical in this class since it is this work that counts for much of your grade.** You should participate in class by asking questions. People talking during lectures will be asked to leave. *No cell phone use, or surfing the web allowed during class. Students that break these rules will be asked to leave. Cell phones will be returned at the of the class. Please don't leave in the middle of class it is disruptive to the other students.*
- *Late Assignments.* **No credit, WITH NO EXCEPTIONS, will be given for late work.** Because we want to be fair to those that turn in work on time, we will not accept late work. The “lecture homework” is due **at the start of class on D2L** – no late work will accepted. There is an absolute deadline for homework. If you are concerned about not being able to turn in your work, feel free to turn it in early! We will accept homework at any class meeting prior to the deadline. Please do not email homework, submit it to D2L on the assignments tab.

Absence Policy Fall 2022: Due to COVID-19 and general illness issues your lowest homework will not hurt your final grade, **so you can miss a maximum of one homework due to, say, illness (or for whatever reason you want) without it lowering your grade.**

- *Missed Quizzes and exams.* **No makeup quizzes or midterms, WITH NO EXCEPTIONS, will be administered.** The exams/quizzes are already scheduled and posted on the class schedule. If you know that you will miss an exam (before the exam), you must make arrangements (only for extremely rare circumstances) for an oral exam at a time and date prior to the written exam. If

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you can see a conflict for religious reasons please tell the professor within the first 3 weeks of class, all the quizzes, midterms are clearly scheduled below, after the first 3 weeks have passed no exceptions will be made.

Absence Policy Fall 2022: Due to COVID-19 and general illness issues your lowest quiz will not hurt your final grade, **so you can miss a quiz due to, say, illness (or for whatever reason) without it lowering your grade.**

- *Students requiring special accommodation* in testing or note taking must notify Prof. Close and must deliver to Prof. Close the Disability Resource Center faculty letter within the first few days of the course. If you have any questions about accommodations please first talk to the Disability Resource Center <http://drc.arizona.edu>.
- *Grading.* You have one week from the time an assignment or exam is returned to challenge any perceived errors. Although rare, there are occasions when grading errors occur, and you should review your returned work. Note (fall 2022) that your lowest quiz and lowest homework grade will each be dropped from your final grade.

Web Site

The course website in on D2L (desire to learn) it includes the active syllabus, schedule, special announcements, and other course materials. It is also where your grade will be posted as soon as possible. The Monday and Wednesday HW assignments will be always found on the assignments tab.

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored.

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Participating in this course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. If you are sick you have the option of staying home and not completing some class work (1 quiz and 1 HW) and it will not lower your grade – but you will have to catch up later on this material to be ready for the midterms. This policy is reasonable because it should not be necessary to miss more than 1 HW since the HWs can all be done 100% from home. Also we only have 6 quizzes so being sick for ≥ 2 of these 6 days is very unlikely. Attendance in-class for the two midterms is mandatory. The dates for both midterm exams (and all 6 quizzes) are in the attached schedule below, so there is no reason to miss them.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself.

Disruptive Behavior in an Instructional Setting:

<http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

Accessibility and Accommodations

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog.

See: Code of Academic Integrity: <https://deanofstudents.arizona.edu/policies/code-academic-integrity>

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://www.library.arizona.edu/help/tutorials/plagiarism/index.html>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted period. Violations to this and other course rules

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are subject to the Code of Academic Integrity *and may result in course sanctions*. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct also constitutes copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Course Learning Outcomes

Upon completion of this course, students will be able to:

- understand the nature and application of physical science
- apply ideas and processes beyond the classroom
- recognize the complexity of many scientific issues
- speak and write about scientific knowledge
- appreciate the relative scale of objects, rates of change, linear and nonlinear growth
- critically analyze and interpret data and results presented in tables, graphs and charts as well as perform appropriate mathematical calculations

COVID-19 issues Fall 2022

- Course modality: This class is scheduled to be taught in the **in-class** modality that we signed up for. We are ~50 students in a lecture hall (Steward N210) with capacity for ~200 students: so if we wear good masks (optional) and spread out in N210 (not optional) we should all be fine this semester.
- **Classroom attendance (FALL 2022):**
 - If you feel sick, or if you need to isolate or quarantine based on [University protocols](#), stay home. Except for seeking medical care, avoid contact with others and do not travel. Now (fall 2022) *if* you are vaccinated you do **not** need to self-isolate if you have been in close contact with a person with COVID-19 (get tested day 5, wear a mask for 10 days, but keep coming to class if not sick).
 - Notify Prof. Close if you will be missing a Quiz or Midterm ASAP. There are no make-up quizzes or midterms. But the lowest quiz is dropped.
 - All the HWs can be done remotely with the on-line lectures and so none need to be missed. But the lowest HW is dropped.
 - All dates for all assignments have been posted and cannot be changed nor extended.
 - Don't miss any classes – number one correlation with a poor grade in this class is simply not showing up and/or not doing the work.
 - If you must miss the equivalent of more than one week of class, please contact the Dean of Students Office DOS-deanofstudents@email.arizona.edu to share documentation about the challenges you are facing.
 - Voluntary, free, and convenient [COVID-19 testing](#) is available for students on Main Campus.

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- If you test positive for COVID-19 and you are participating in on-campus activities, you must report your results to Campus Health. To learn more about the process for reporting a positive test, visit the [Case Notification Protocol](#).
 - The COVID-19 vaccine and boosters are available for all students at [Campus Health](#).
 - Visit the [UArizona COVID-19](#) page for the most up-to-date information.
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- **Academic advising:** If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@arizona.edu.

 - **Life challenges:** If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at (520) 621-2057 or [DOS-deanofstudents@email.arizona.edu](mailto:deanofstudents@email.arizona.edu).

 - **Physical and mental-health challenges:** If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520) 621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

 - **Equipment and software requirements:** For this class you will need daily access to the following hardware: laptop; regular access to reliable internet signal; ability to download files from D2L and run a PDF reader and/or Microsoft word.

 - **Statement on compliance with COVID-19 mitigation guidelines:** As we enter the Fall semester, the health and wellbeing of everyone in this class is the highest priority. Accordingly, we are all required to follow the university guidelines on COVID-19 mitigation. Please visit www.covid19.arizona.edu for the latest guidance.

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor. The most current version will always be posted on D2L.

| Mon | | Tue | | Wed | | Thu | | Fri | |
|-----|--|-----|------------------------|-----|--|-----|---------------------|-----|-------------------------------------|
| 1 | | 2 | | 3 | | 4 | | 5 | First quarter 4:06am |
| 8 | | 9 | | 10 | | 11 | Full moon 6:36pm | 12 | |
| 15 | | 16 | | 17 | | 18 | Last quarter 9:36pm | 19 | |
| 22 | FIRST CLASS 11am - A202 class N210 11:45am - Prof. Office Hours | 23 | Order Streaming videos | 24 | Astronomy Review 11am - A202 class N210 11:45am - Prof. Office Hours | 25 | 2pm - TA Zoom Hours | 26 | Lecture 1 11am - A202 class N210 |
| 29 | HW2 DUE lecture 2 11am - A202 class N210 11:45am - Prof. Office Hours | 30 | 2pm - TA Zoom Hours | 31 | HW3 DUE lecture 3 11am - A202 class N210 11:45am - Prof. Office Hours | 1 | 2pm - TA Zoom Hours | 2 | Quiz 1 11am - A202 class N210 |

| Mon | Tue | Wed | Thu | Fri |
|--|---------------------------|--|---|---|
| 29 HW2 DUE lecture 2 11am - A202 class N210 11:45am - Prof. Office Hours | 30 2pm - TA Zoom Hours | 31 HW3 DUE lecture 3 11am - A202 class N210 11:45am - Prof. Office Hours | 1 2pm - TA Zoom Hours | 2 Quiz 1 11am - A202 class N210 |
| 5 Labor Day NO CLASS | 6 2pm - TA Zoom Hours | 7 HW4 DUE lecture 4 11am - A202 class N210 11:45am - Prof. Office Hours | 8 2pm - TA Zoom Hours | 9 Start Observing Projects 11am - A202 class N210 |
| 12 HW5 DUE lecture 5 11am - A202 class N210 11:45am - Prof. Office Hours | 13 2pm - TA Zoom Hours | 14 HW6 DUE lecture 6 11am - A202 class N210 11:45am - Prof. Office Hours | 15 First Day of Hispanic Heritage Month 2pm - TA Zoom Hours | 16 Quiz 2 on HW4-6 11am - A202 class N210 |
| 19 HW7 DUE lecture 7 11am - A202 class N210 11:45am - Prof. Office Hours | 20 2pm - TA Zoom Hours | 21 HW8 DUE lecture 8 11am - A202 class N210 11:45am - Prof. Office Hours | 22 2pm - TA Zoom Hours | 23 Quiz 3 11am - A202 class N210 |
| 26 NO HW9 lecture 9 11am - A202 class N210 11:45am - Prof. Office Hours | 27 2pm - TA Zoom Hours | 28 midterm review 11am - A202 class N210 11:45am - Prof. Office Hours | 29 2pm - TA Zoom Hours | 30 Midterm 1 11am - A202 class N210 |

| Mon | Tue | Wed | Thu | Fri |
|------------------------------|---------------------------------------|------------------------------|---------------------|------------------------|
| 26 | 27 | 28 | 29 | 30 |
| NO HW9 | 2pm - TA Zoom Hours | midterm review | 2pm - TA Zoom Hours | Midterm 1 |
| lecture 9 | | 11am - A202 class N210 | | 11am - A202 class N210 |
| 11am - A202 class N210 | | 11:45am - Prof. Office Hours | | |
| 11:45am - Prof. Office Hours | | | | |
| 3 | 4 | 5 | 6 | 7 |
| HW10 DUE | 2pm - TA Zoom Hours | HW11 DUE | 2pm - TA Zoom Hours | OBSERVING projects |
| lecture 10 | | lecture 11 | | 11am - A202 class N210 |
| 11am - A202 class N210 | | 11am - A202 class N210 | | |
| 11:45am - Prof. Office Hours | | 11:45am - Prof. Office Hours | | |
| 10 | 11 | 12 | 13 | 14 |
| Columbus Day | 2pm - TA Zoom Hours | HW12 DUE | 2pm - TA Zoom Hours | quiz 4 on HW10-12 |
| Indigenous Peoples' Day | | lecture 12 | | 11am - A202 class N210 |
| NO CLASS | | 11am - A202 class N210 | | |
| 17 | 18 | 19 | 20 | 21 |
| HW13 DUE | 2pm - TA Zoom Hours | HW14 DUE | 2pm - TA Zoom Hours | quiz 5 |
| Last quarter 10:15am | | lecture 14 | | 11am - A202 class N210 |
| lecture 13 | | 11am - A202 class N210 | | |
| 11am - A202 class N210 | | 11:45am - Prof. Office Hours | | |
| 11:45am - Prof. Office Hours | | | | |
| 24 | 25 | 26 | 27 | 28 |
| HW15 DUE | New moon 3:49am | HW16 DUE | 2pm - TA Zoom Hours | HW17 DUE |
| lecture 15 | 2pm - TA Zoom Hours | lecture 16 | | lecture 17 |
| 11am - A202 class N210 | | 11am - A202 class N210 | | 11am - A202 class N210 |
| 11:45am - Prof. Office Hours | | 11:45am - Prof. Office Hours | | |
| 31 | 1 | 2 | 3 | 4 |
| First quarter 11:37pm | First Day of American Indian Heritage | HW19 DUE | 2pm - TA Zoom Hours | quiz 6 HW15-19 |
| HW18 DUE | 2pm - TA Zoom Hours | lecture 19 | | 11am - A202 class N210 |
| Halloween | | 11am - A202 class N210 | | |
| lecture 18 | | 11:45am - Prof. Office Hours | | |
| 11am - A202 class N210 | | | | |
| 11:45am - Prof. Office Hours | | | | |

| Mon | Tue | Wed | Thu | Fri |
|--|---|--|---|--|
| 31 First quarter 11:37pm HW18 DUE Halloween lecture 18 11am - A202 class N210 11:45am - Prof. Office Hours | 1 First Day of American Indian Heritage 2pm - TA Zoom Hours | 2 HW19 DUE lecture 19 11am - A202 class N210 11:45am - Prof. Office Hours | 3 2pm - TA Zoom Hours | 4 quiz 6 HW15-19 11am - A202 class N210 |
| 7 HW21 DUE (NO HW20) lecture 21 11am - A202 class N210 11:45am - Prof. Office Hours | 8 Election Day Full moon 4:02am 2pm - TA Zoom Hours | 9 HW22 DUE lecture 22 11am - A202 class N210 11:45am - Prof. Office Hours | 10 2pm - TA Zoom Hours | 11 NO CLASS Veterans Day |
| 14 HW23 DUE lecture 23 11am - A202 class N210 11:45am - Prof. Office Hours | 15 2pm - TA Zoom Hours | 16 Last quarter 6:27am NO HW24 DUE lecture 24 11am - A202 class N210 11:45am - Prof. Office Hours | 17 2pm - TA Zoom Hours | 18 midterm 2 review 11am - A202 class N210 |
| 21 midterm 2 11am - A202 class N210 | 22 2pm - TA Zoom Hours | 23 NO CLASS New moon 3:57pm | 24 Thanksgiving Day 2pm - TA Zoom Hours | 25 NO CLASS Native American Heritage Day |
| 28 Work on Projects 11am - A202 class N210 | 29 2pm - TA Zoom Hours | 30 First quarter 7:36am Work on Projects 11am - A202 class N210 | 1 2pm - TA Zoom Hours | 2 Projects DUE 11am - A202 class N210 |

| Mon | | Tue | | Wed | | Thu | | Fri | |
|--|--|---------------------|--|--|--|----------------------|--|--|--|
| 28 | | 29 | | 30 | | 1 | | 2 | |
| Work on Projects 11am - A202 class N210 | | 2pm - TA Zoom Hours | | First quarter 7:36am Work on Projects 11am - A202 class N210 | | 2pm - TA Zoom Hours | | Projects DUE 11am - A202 class N210 | |
| 5 | | 6 | | 7 | | 8 | | 9 | |
| questions about projects 11am - A202 class N210 | | 2pm - TA Zoom Hours | | Full moon 9:08pm LAST CLASS 11am - A202 class N210 | | | | | |
| 12 | | 13 | | 14 | | 15 | | 16 | |
| | | | | | | | | Last quarter 1:56am | |
| 19 | | 20 | | 21 | | 22 | | 23 | |
| | | | | | | | | New moon 3:17am | |
| 26 | | 27 | | 28 | | 29 | | 30 | |
| Christmas Day (substitute) | | | | | | First quarter 6:21pm | | | |