

Syllabus For Astr 202

Welcome to Astronomy 202

Life in the Universe

Spring 2020, section 001

Professor: Laird Close, office: N428 Steward Observatory,
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(when emailing please add Astr 202 in the subject line)
Office hours: MW noon-1PM in my office after class

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Office hours Tuesdays and Thursdays 2-3PM

Introduction to the Course

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

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. 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.

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*

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*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

The textbook for this course is the course guide for Professor Close's "[Life in Our Universe](#)" that also has a set of 24 high-quality lectures on a set of DVDs (or internet streaming). All available for purchase from the Great Courses website. *Students that are enrolled in Astr 202 can purchase these DVDs at a much reduced (70% off) rate – written instructions on how to do this will be given first day of class.* You must order these DVDs (in order to receive the printed textbook) to attend this class (you can also choose to stream the lectures on-line if you don't have a DVD player). **These 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 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 Arizona). This allows everyone to do better in this course than just a classical lecture class could allow.

Evaluation

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

Observing/writing/group project (20%),
Monday and Wednesday homework exercises (25%),
Friday in-class quizzes (20% in total),
Midterm exam 1 (15%),
Midterm exam 2 (20%).

Both exams are closed-note 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).

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The final course grades:

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

Group Project: Astronomical Observing on the 21 inch Campus Telescope

The observing project (using groups of 2 students each) will be detailed later in the semester.

The grades for this project will be based on mainly on individual effort. Students that do not help their group (or use copied text in their work without quotations and citations) will be awarded a grade of Zero. Grades will be strongly based on the individual efforts, observing work, and individual report.

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 and in your group are 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. Eating or drinking is not permitted in the lecture hall. Talking is also prohibited unless you want to ask a question during lecture or unless you are preparing a presentation with your group during the discussion sessions. People talking during lectures will be asked to leave. *No cell phone use, reading newspapers, or surfing the web*

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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** – 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, only the paper copies handed out will be graded (do not email homework it will not be graded). Your lowest homework will be dropped from your final grade, so you can miss one HW 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 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. The lowest quiz score is dropped, so missing one quiz does not count against you.
- *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
- *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 that the lowest quiz and lowest homework grade will 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.

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Other Important Notes about this class:

Absence and Class Participation Policy

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/2015-16/policies/classatten.htm>

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. See:

<http://uhap.web.arizona.edu/policy/appointed-personnel/7.04.02>

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. Students who miss class due to illness or emergency are required to bring documentation from their healthcare provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

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. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

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: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

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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 without the instructor's express written consent. Violations to this and other course rules 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 may also constitute 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>

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.

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
- read and understand scientific literature from popular sources such as magazines and newspapers

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31 New Year's Eve	1 New Year's Day	2 First quarter 9:	3	4
5	6	7	8	9	10 Full moon 12:21pm	11
12	13	14	15 First Day of Class 11am - A202 class	16	17 Astronomy Review Last quarter 5:58am 11am - A202 class	18
19	20 Martin Luther King No Class 11am - A202 class	21	22 Lecture 1 11am - A202 class 12pm - office hours	23	24 New moon 2:42pm Observing Project 11am - A202 class	25
26	27 HW 2 DUE Lecture 2 11am - A202 class 12pm - office hours	28	29 HW 3 DUE Lecture 3 11am - A202 class 12pm - office hours	30	31 Quiz 1 11am - A202 class	1 First quarter 6:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
	HW 2 DUE Lecture 2 11am - A202 class 12pm - office hours		HW 3 DUE Lecture 3 11am - A202 class 12pm - office hours		Quiz 1 11 am - A202 class	First quarter 6:
2	3	4	5	6	7	8
	HW 4 DUE Lecture 4 11am - A202 class 12pm - office hours		HW 5 DUE Lecture 5 11am - A202 class 12pm - office hours		Quiz 2 11 am - A202 class	
9	10	11	12	13	14	15
Full moon 12:33am	HW 6 DUE Lecture 6 11am - A202 class 12pm - office hours		HW 7 DUE Lecture 7 11am - A202 class 12pm - office hours		Quiz 3 Valentine's Day 11 am - A202 class	Last quarter 3:17pm
16	17	18	19	20	21	22
	HW 8 DUE Lecture 8 Presidents' Day 11am - A202 class 12pm - office hours		HW 9 DUE Lecture 9 11am - A202 class 12pm - office hours		Midterm Review 11 am - A202 class	
23	24	25	26	27	28	29
New moon 8:32am	Midterm 1 11am - A202 class 12pm - office hours		Lecture 10 No HW 10 11am - A202 class 12pm - office hours		Midterm Results 11 am - A202 class	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
	<p>First quarter 12:</p> <p>HW 11 DUE</p> <p>Lecture 11</p> <p>11am - A202 class</p> <p>12pm - office hours</p>	<p>Super Tuesday</p>	<p>HW 12 DUE</p> <p>Lecture 12</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>Quiz 4</p> <p>11am - A202 class</p>	
8	9	10	11	12	13	14
<p>Daylight Saving</p>	<p>Full moon 10:48am</p> <p>No Class</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>No Class</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>No Class</p> <p>11am - A202 class</p>	
15	16	17	18	19	20	21
	<p>HW 13 DUE</p> <p>Last quarter 2:34am</p> <p>Lecture 13</p> <p>11am - A202 class</p> <p>12pm - office hours</p>	<p>St. Patrick's Day</p>	<p>HW 13 DUE</p> <p>Lecture 14</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>Quiz 5</p> <p>11am - A202 class</p>	
22	23	24	25	26	27	28
	<p>HW 15 DUE</p> <p>Lecture 15</p> <p>11am - A202 class</p> <p>12pm - office hours</p>	<p>New moon 2:28am</p>	<p>HW 16 DUE</p> <p>Lecture 16</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>Quiz 6</p> <p>11am - A202 class</p>	
29	30	31	1	2	3	4
	<p>HW 17 DUE</p> <p>Lecture 17</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>First quarter 3:21am</p> <p>HW 18 DUE</p> <p>Lecture 18</p> <p>11am - A202 class</p> <p>12pm - office hours</p>		<p>Observing Projects</p> <p>11am - A202 class</p>	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
	HW 17 DUE Lecture 17 11am - A202 class 12pm - office hours		First quarter 3:21am HW 18 DUE Lecture 18 11am - A202 class 12pm - office hours		Observing Projects 11am - A202 class	
5	6	7	8	9	10	11
	HW 19 DUE Lecture 19 11am - A202 class 12pm - office hours	Full moon 7:35pm	Lecture 20 no HW 20 11am - A202 class 12pm - office hours		Quiz 7 11am - A202 class	
12	13	14	15	16	17	18
Easter Sunday	Easter Monday HW 21 DUE Lecture 21 11am - A202 class 12pm - office hours	Last quarter 3:56pm	HW 22 DUE Lecture 22 Tax Day 11am - A202 class 12pm - office hours		Quiz 8 11am - A202 class	
19	20	21	22	23	24	25
	HW 23 DUE Lecture 23 11am - A202 class 12pm - office hours		Lecture 24 New moon 7:26pm No HW 24 11am - A202 class 12pm - office hours		11am - A202 class	
26	27	28	29	30	1	2
	Midterm review 11am - A202 class 12pm - office hours		Midterm 2 11am - A202 class	First quarter 1:	No Class 11am - A202 class	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	1	2
	Midterm review 11am - A202 class 12pm - office hours		Midterm 2 11am - A202 class	First quarter 1:	No Class 11am - A202 class	
3	4	5	6	7	8	9
	Guest lecture 11am - A202 class	Cinco de Mayo	Class optional 11am - A202 class	Full moon 3:45am		
10	11	12	13	14	15	16
Mother's Day				Last quarter 7:03am		
17	18	19	20	21	22	23
					New moon 10:39am	
24	25	26	27	28	29	30
	Memorial Day				First quarter 8:	