

MCB 295G: Life in the Universe - Colloquium

Fall 2020

Course meeting: Wednesday 3:00 PM – 3:50 PM

Room: TBD

1 unit

Instructor Information Dr. Solange Duhamel Department of Molecular and Cellular Biology University of Arizona Office: Life Sciences South Room 354	Contact Information Email: duhamel@email.arizona.edu Phone: (520) 621-6057 Instructor Availability Office Hours: Wednesdays 4:30 PM – 5:30 PM
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Course Description

Students will explore the study of life in the Universe: also known as Astrobiology. The course will provide a brief overview of the ways the physiological limits of life on Earth have been considered to predict the potential for life to exist elsewhere in the Universe. We will explore key research from Astrobiologists investigating extant or extinct life and biosignatures from extreme environments. By conducting planetary field analogue studies, or by subjecting terrestrial samples to simulated space or planetary environments Astrobiologists are exploring the limits of life as we know it.

Course Prerequisites and Co-requisites:

This is a second-year colloquium course and requires the students to have either completed or to be concurrently enrolled in introductory biology.

Required Course Materials

Reading: readings will be available on D2L

Other materials: none

Course Objectives and Expected Learning Outcomes:

In this course, students will:

- Participate in structured discussions of course readings,
- Employ evidence-based learning methods to studying topics in Astrobiology,
- Develop and deliver an oral presentation on a current topic in Astrobiology,

By participating in the class, students will be able to:

MCB 295G Syllabus

Upon successful completion of the MCB 295G, you will be able to:	Which aligns with MCB program outcome:
Discuss in broad terms key concepts in Astrobiology including cell metabolism, and physiology under extreme environments.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Research a current issue in the Astrobiology.	Evaluate the reliability of sources of information about biology.
Give a short oral presentation on a current issue in Astrobiology.	Communicate effectively about scientific ideas and methods.
Discuss research papers, their questions, hypotheses, approaches and findings.	Apply analytical thinking to biological problems

Tentative Schedule of Topics and Activities

Week	Topic	Activity
1	The Astrobiological View of Habitability	In-class discussion
2	Life in Planetary Field Analogues Sites: overview	In-class discussion
3	Life in Low Energy Subsurface Environments	In-class discussion
4	Life in Mars Analogues	In-class discussion
5	Life in Icy Worlds Analogues	In-class discussion
6	Life in Ocean World Analogues	In-class discussion
7	Life in Sea-Ice Environments	In-class discussion
8	Life in Earth's Early Life Analogues	In-class discussion
9	Life in Laboratory Analogues: overview	In-class discussion
10	Life under Mars Environmental Simulation	In-class discussion
11	The Ladder of Life Detection	In-class discussion
12	Space Microbiology	In-class discussion
13	Tardigrades in Space Research	In-class discussion
14	Microbial Transfer Through Space and Planetary Protection	In-class discussion
15	Term Project Presentations	No reading
16	Term Project Presentations	No reading
Final	Summary, Conclusions and Perspectives	No reading

Attendance and Class Participation Policies

MCB 295G is an active colloquium where students are expected to attend class ready to discuss the week's reading and participate in the related activities. As such weekly attendance and participation are required. If you anticipate being absent or are unexpectedly absent, please contact me as soon as possible.

To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu.

If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

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

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: <https://deanofstudents.arizona.edu/absences>

Required Course Activities, Assignments/Exams

Class Discussion (16 total, 14 will count towards your grade): Students will participate in class-wide discussion

Reflection Journal Entries (16 total, 14 will count toward your grade): Students will make weekly entries in a journal where they will reflect upon their learning that week. Template and samples will be provided on the first day of class.

Active Learning Activities (16 total, 14 will count toward your grade): Students will turn in weekly assignments based on in class activities

Term Project Presentation (required): On the date of the final exam, student will make a presentation on a topic of their choice. Grading rubric will be provided to students in advance.

Final Project

During the last two weeks of class, students will make a presentation on a topic of their choice. <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>

Grading Scale and Grade Policies

Course grade will be based on:

Class Discussion (14): graded on weekly participation. Two assignments will be dropped (which can be used for absences or low scores). Total: 25%

Reflection Journal (14): *weekly check.* Two assignments will be dropped (which can be used for absences or low scores). Total: 25%

Active Learning Activities (14): *turned in for grading.* Two assignments will be dropped (which can be used for absences or low scores). Total: 25%

Term Project Presentation: rubric will be provided. Total: 25%

Grades will be awarded as follows:

<i>Grade</i>	
<i>S</i>	85% or more
<i>P</i>	60%-84%
<i>E</i>	59% or below

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively

Dispute of Grade Policy Provide the acceptable time period for disputing a grade on a paper, project, or exam.

Late Assignments Policy: Late work will generally not be accepted. However, if it is accepted, a penalty of 25% will be applied to the assignment’s score for each day that the assignment late (i.e., if your score on the homework assignment would have been 85%, but it was handed in a day late, you will receive a score of 60%). For exams, if you have reason to believe you will be absent from class please let the instructor know in advance.

Extra credit policy: There will be no extra credit

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel

comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). The use of cell phones and computers for activities outside of coursework is prohibited during class. Non-class activities are also prohibited (includes things like playing cards, playing with your dog, quilting, building a model airplane, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Attendance is required from all students at all lectures, and while in class, students are expected to conduct themselves in a considerate manner. Late arrivals and early departures are disruptive and not permitted. Students must disable cell phones for the duration of the class and refrain from answering calls (please take any emergency calls outside and explain them later). Students that persistently disrupt the class may be removed through the administrative drop procedure. Video recording in the classroom is not permitted without prior approval. No food or drink (except water) is permitted in this room and please clear up your seating area after use.

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 for Students with Disabilities

It is the University's goal 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 Disability Resources (520-621-3268) to establish reasonable accommodations. For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu>

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

Academic Integrity Policies

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/codeofacademicintegrity>

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

The University Libraries have some excellent tips for avoiding plagiarism, available at

<http://new.library.arizona.edu/research/citing/plagiarism>.

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>

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Additional Resources for Students

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at

<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

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.