

AST 2021A Course Outline, Fall 2023

1. Course Information

Course Information

Title: Astronomy 2021A: The Search for Life in the Universe m

Prerequisites: None

Antirequisites: PHY 1101A/B, PHY 1201A/B, PHY 1401A/B, PHY 1501A/B, the former Physics 1028A/B, the former Physics 1301A/B.

If you have taken an antirequisite PHY course and still enroll in AST 2021A without special permission from the Associate Chair for Undergraduate Studies in the Department of Physics & Astronomy, you will lose credit for your PHY course!

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Prof. Stanimir Metchev	smetchev@uwo.ca	PAB 201	x88438	Mon, 1–2pm
TA: Ms. Samantha Lambier (primary email contact)	slambier@uwo.ca	PAB 311		
TA: Mr. Max Vovk	mvovk@uwo.ca			

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Before contacting the instructors, make sure you have carefully read this document or the course Forum on OWL. Questions that are addressed in this document or in the Forum will not be answered over e-mail.

Please, use the primary contact for the course, TA Samantha Lambier, for all course-related inquiries. Emails to the primary TA contact will be answered most promptly.

If the instructor's office hour is not convenient, you can make an appointment for another day/time, or talk to the instructor after class. If you prefer an appointment with a TA, you can contact them through OWL or via email.

3. Course Syllabus, Schedule, Delivery Mode

Course description. This course is designed for non-science students as an introduction to current scientific thinking on the possibility of extraterrestrial life and intelligence. Ideas, observations, and experiments from the frontiers of many areas of science converge in this unique interdisciplinary field. Emphasis will be on topics of current interest, including searches for life in our Solar System, detection of extrasolar planets, and the origins of life on Earth.

v1.0 – Sep 6, 2023

Course meetings. The course entails three in-person lecture hours weekly, and no regularly scheduled labs or tutorials. Two optional [*] sessions will be scheduled at [*] on campus for viewing the Moon or planets. Regular short in-class quizzes will be used to ensure grasp of the course material.

Course-level learning outcomes. By the end of the course, you would be able to:

- assess within the framework of the natural sciences the uniqueness of Earth and life on Earth;
- demonstrate a conceptual understanding (comprehension) of those physical, chemical, geological and biological processes that determine the probability to find Earth-like life anywhere in the Solar system;
- demonstrate a conceptual understanding (comprehension) of the physical, chemical, geological and biological parameters of Exoplanets, and the measurement of these parameters; and,
- know the definitions of terms and explain the basic models/theories associated with the formation of planetary systems, planetary lithospheres, hydrospheres and atmospheres, as well as life, its evolution, intelligence and the development of intelligent species.

Course schedule (provisional).

Week #	Date	Topic	Reading	Notes
1	Sep 7	Science of Life in the Universe	Chs. 1, 2	
2	Sep 14	Nature of the Universe	Ch. 3	
3	Sep 21	Habitability of Earth	Ch. 4	
4	Sep 28	Life on Earth	Ch. 5	
5	Oct 5	Origins and Evolution	Ch. 6	
6	Oct 12	Life in the Solar System	Ch. 7	
7	Oct 19	Mars	Ch. 8	
	Oct 26	<i>Midterm (Chs. 1 – 8); during [*] lecture</i>		
	Oct 30	<i>Reading Week – no classes</i>		
	Nov 6	<i>Midterm Makeup ([*]; tentative)</i>		
8	Nov 7	Jovian Moons	Ch. 9	
9	Nov 14	Habitability	Ch. 10	
10	Nov 21	Beyond the Solar System: Exoplanets	Ch. 11	
11	Nov 28	Extraterrestrial Intelligence	Ch. 12	
12	Dec 5	Interstellar Travel & Review	Ch. 13	
	TBD	<i>Final Exam (Chs. 1 – 13)</i>		

Key Sessional Dates:

Classes begin: September 7, 2023

Fall Reading Week: October 30 – November 5, 2023

Last day to withdraw from a first-term half course without academic penalty: November 13, 2023

Classes end: December 8, 2023

Exam period: December 10 – 22, 2023

Contingency plan. Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Textbook. *Life in the Universe, 5th Edition*, by Bennett et al. (Princeton University Press; [UWO Bookstore link](#)). It is acceptable to use earlier editions as well, but it is your responsibility to be aware of the (sometimes significant) differences with the latest edition. All references to the textbook (e.g. page numbers, sections, etc) will refer to the 5th edition.

iClicker app. In-class quizzes will be administered through the iClicker app. Make sure that you have an account in the iClicker student app. *You will need the iClicker app to get credit for the in-class quizzes.* Western has a site licence for iClicker, so you can use it for free. The course name in the iClicker app is “The Search for Life in the Universe” and the course ID is “AST2021A”. iClicker can be accessed from the course site menu on OWL. From outside of OWL, you can join the course in the iClicker Student spp at this link: <https://join.iclicker.com/RJKS>.

OWL. Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. All course material will be posted to OWL: <http://owl.uwo.ca>. If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Technical Requirements. A laptop computer or a smartphone with a wireless internet or data connection that runs the iClicker app for in-class quizzes. A calculator for the Midterm and Final exams.

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

In-class iClicker quizzes (drop lowest 2 of 12)	30%
Midterm Exam (Chs. 1–7; [*])	25%
Final Exam (cumulative)	45%
Two extra-credit evening telescope viewing sessions	(dates TBD) up to 6%

6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

iClicker quizzes. No make-up opportunities will be offered for the iClicker quizzes, whether for medical, personal, or technical reasons. No academic consideration is required if you miss quizzes. However, the 2 lowest of the 12 quizzes will be dropped. In addition, you would be able to make up for up to two missed quizzes by attending the optional evening-time telescope viewing sessions.

Midterm Exam. If you have to miss the Midterm, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. You may then be allowed to take a makeup version of the Midterm. For further information, please consult the University’s medical illness policy at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

The Student Medical Certificate is available at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Final Exam. If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you can do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

Note: missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

7. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>. In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Electronic device policy. A laptop or a smartphone with wireless internet connection is required for taking the iClicker quizzes in classes. The iClicker app will be used for evaluation and attendance-taking, and it is student-specific. You are not allowed to use other students' iClicker devices/apps/codes, or to give access to your device/app/code to another student. No electronic devices other than calculators are allowed on exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Final course marks. The Department of Physics and Astronomy may, in exceptional cases, adjust the final course marks in order to conform to Departmental policy. Final grades will be rounded to the nearest integer, and grades ending in 9 (e.g., 69) are not automatically “bumped up” by 1 mark.

9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.