

GEOG 2090A – Space Exploration Course Outline: Section 001 Fall 2023

This course is taught online.

Legend: teal reflects dates that change yearly, green means change to your own info, yellow is mandatory for Western's syllabi and should not be deleted.

1. Course Information

	Delivery Mode	Day/Time	Location
Lecture	Online (asynchronous)	Materials Posted Tuesday Nights by 9:00 PM	OWL



Classes Start	Fall Reading Week	Classes End	Study day	Exam Period
September 7	October 30-November 5	December 8	December 9	December 10-22

September 15, 2023: Last day to add a second-term half course

October 9, 2023: Thanksgiving Holiday

November 13, 2023: Last day to drop a first term half course without penalty



Course Instructor	Contact Information	Office Hours
Dr. Danny Bednar	dbednar@uwo.ca	By appointment

Teaching Assistant(s)	Contact Information	Office Hours
Jesse Sutton	jsutto22@uwo.ca	By appointment
Andrew Siwabessy	asiwabes@uwo.ca	By appointment



- Office hours will be held MS Teams, by appointment
- Students will be able to sign up for an appointment via email
- Non-mandatory synchronous sessions will be held periodically throughout the semester

2. Calendar Description

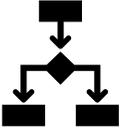
(Survey of human activity in outer space, including history of spaceflight, scientific exploration, economic and military uses of space, natural resources and hazards, legal and ethical implications, and plausible future developments.

Lecture hours, 0.5 course

Antirequisite(s): None

Prerequisite(s): None

Prerequisite checking is the student's responsibility



Senate Regulations state, "unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites."

3. Textbook

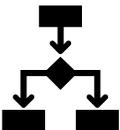


Rothery, D. (2010). Planets: A Very Short Introduction. Oxford University Press.

4. Course Objectives and Format

To familiarize students with the history of space exploration, including its socio-political, economic, and cultural linkages. The course is intended to cover both natural and social science components of humanity's engagement with outer space for the purposes of scientific exploration.

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.



[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#). [Using the right browser is important, especially when using different features integrated with OWL]

If students need assistance, 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.

5. Learning Outcomes

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

- Explain the advancement of human engagement with non-Earth spaces and how these engagements have interacted with other processes in society historically and geographically.
- Summarize the key discoveries and findings of major space exploration programs and the evolution of humanity's scientific understanding of the solar system.
- Evaluate the value and repercussions of past, present, and future space exploration and space technologies to society.

Recognize the challenges associated with human and robotic exploration of our solar system



6. Course Content and Schedule (subject to minor changes)

Date	Week	Topic Breakdown (.5 hr)	Lesson (1.5 hrs)	Podcast (1 hr)	Reading	Assignments	
12-Sep	1	What is Space Exploration?		What is Space Exploration?	Dunnet et al. (2018) - Geographies of Outer Space	Live Q&A	
19-Sep	2	Formation of the Solar System	Formation of The Solar System	The Formation of the Moon w/ Dr. Hill	Rothery (2010): The Solar System		
26-Sep	3	Geography of Solar System	Geography of the Solar System	The Coming Year in Space w/ Dr. Stooke	Rothery (2010): Asteroids & Trans-Neptunian Objects		
3 - Oct	4	Pre-Space Age	Before the Space Age	Space & Colonialism w/ Dr. Trevino	Lane (2006) - Martian Canal Craze	Weeks 1-3 Summary	
10-Oct	5	The Space Race	The Space Race	Ethics & Space w/ Dr. Handmer	Neufeld (2002) – von Braun, the SS, and Concentration Camp Labour		
17-Oct	6	The Apollo Program	The Apollo Program	Those Other Apollo Missions w/ Dr. Stooke	Commander (2016) – The Space for Race		
24-Oct	7	Exploring the Moon	Robotic Exploration of the Moon	What is Artemis w/ Dr. Morse	1) Sagan (1991) – Why Send Humans? 2) Goldsmith & Rees (2020) - Do We Really Need to...?	Weeks 4-6 Summary	
31-Oct	8	Reading Weak					
07-Nov	9	Martian Exploration	Robotic Exploration of Mars	Driving A Mars Rover w/ Dr. Francis	Conley & Rummel (2013) - Appropriate Protection for Mars		
14-Nov	10	Exploring the Inner Solar System	Exploring the Inner Solar System		Rothery (2010): Rocky Planets	Live Q&A	
21-Nov	11	Exploring the Outer Solar System	Exploring the Outer Solar System	Blowing Up Pluto w/ Dr. Denton	Rothery (2010): Giant Planet's Satellites & Rings	Weeks 7-10 Summary	
28-Nov	12	The Future of Space Exploration	Space Law w/ Dr. Aganaba	Space & Accessibility w/ Dr. Lee		Project Due	

7. Communication



- Students should check the OWL site every 24 – 48 hours
- A weekly update will be provided on the OWL announcements
- For any other communication, 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 his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).
- Emails will be monitored daily Monday through Friday; students will receive a response within 24 – 48 hours the next business day

8. Evaluation

[Enter in the methods by which student performance will be evaluated and the weight of each, including an exact timetable and schedule of assignments. When exact dates cannot be supplied, a tentative schedule must be issued, with an exact schedule to follow as soon as possible. This regulation does not preclude the administration of surprise assignments and quizzes, as long as the total number, approximate frequency, and value of such assignments are specified in the course outline.]

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Course Summary 1	Written (1000 words)	15	October 3 rd 11:55 PM EST
Course Summary 2	Written (1000 words)	15	October 24 th 11:55 PM EST
Course Summary 3	Written (1000 words)	15	November 21 st 11:55 PM EST
Question Submissions		15	1 per month (Sept, Oct, Nov)
Final Project	PPT Presentation	40	Dec 1



Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text.

- All assignments are due at 11:55 pm EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have unlimited submissions to Turnitin
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Information about late or missed evaluations:

- Late assessments without illness self-reports will be subject to a late penalty 10 %/day
- Late assessments with illness self-reports should be submitted within 24 hours of submission of the last illness self-report

Grades will not be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.

9. Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

Academic Consideration for Student Absence

The University recognizes that a student's ability to meet their academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal and respects the need for privacy and confidentiality in these matters. However, in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student's overall grade in the course shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet their academic responsibilities.

Policy on Academic Consideration for Medical Illness - Undergraduate Students

Student Medical Certificate (SMC)

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

10. Use of Electronic Devices

No electronic devices will be allowed during tests and examinations.

11. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.



1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively.
5. Connect with others. Try forming a study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

12. Continuity of Education Plan (in-person class pivoting to online learning)

In the event of a COVID-19 resurgence during the course that necessitates the university to direct courses move away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

13. Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

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

14. **Western's Commitment to Accessibility**

The Department of Geography and Environment strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2147 for any specific question regarding an accommodation. [Information regarding accommodation of exams](#) is available on the Registrar's website.

More information about "[Accessibility at Western](#)" is available.

15. **Mental Health**

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit Western's [Health and Wellness website](#) for more information on mental health resources.

16. **Support Services**

[Western's Support Services](#)
[Student Development Centre](#)

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.

17. **Important Dates**

September 7: Classes resume
September 15: Last day to add a first term half course
October 9: Thanksgiving Holiday – Department Office Closed
October 30-November 5: Fall Reading Week (No classes; Department Office open)
November 13: Last day to drop a first term half course without penalty
November 30: Last day to drop a full course without penalty
December 8: Classes end
December 9: Study day
December 10-22: Examination Period