

## GEOG 2090A – Space Exploration Course Outline: Section 001 Winter 2024

This course is taught online.

### 1. Course Information

|                | Delivery Mode            | Day/Time                           | Location   |
|----------------|--------------------------|------------------------------------|------------|
| <b>Lecture</b> | Online<br>(asynchronous) | Materials Posted<br>Tuesday Nights | <b>OWL</b> |



| Classes Start | Spring Reading Week | Classes End |
|---------------|---------------------|-------------|
| January 8     | February 17-25th    | April 8     |

January 16, 2024: Last day to add a second-term half course

February 19, 2024: Family Day

March 7, 2024: Last day to drop a second term half course without academic penalty



| Course Instructor       | Contact Information | Office Hours   |
|-------------------------|---------------------|----------------|
| <b>Dr. Danny Bednar</b> | dbednar@uwo.ca      | By appointment |

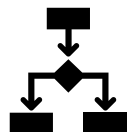
| Student Last Names | Teaching Assistant(s) | Contact Information | Office Hours   |
|--------------------|-----------------------|---------------------|----------------|
| <b>A-L</b>         | <b>Jesse Sutton</b>   | jsutto22@uwo.ca     | By appointment |
| <b>M-Z</b>         | <b>Cailee Welch</b>   | cwelch22@uwo.ca     | By appointment |



- Office hours will be held MS Teams, by appointment
- Students are able to schedule an appointment via email
- Non-mandatory synchronous sessions may 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

### 3. Textbook

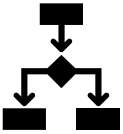


Rothery, D. (2010). Planets: A Very Short Introduction. Oxford University Press.

### 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:

- 1) Explain the advancement of human engagement with non-Earth spaces and how these engagements have interacted with other processes in society historically and geographically.
- 2) Summarize the key discoveries and findings of major space exploration programs and the evolution of humanity's scientific understanding of the solar system.
- 3) Evaluate the value and repercussions of past, present, and future space exploration and space technologies to society.
- 4) 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                            | Lesson                           | Podcast                                   | Reading   | Assignment Due                     |  |
|--------|-----------|----------------------------------|----------------------------------|---|---|------------------------------------|--|
| 9-Jan  | <b>1</b>  | What is Space Exploration?       | None                             | What is Space Exploration?                | 1) Gregory et al. (2009) - Exploration<br>2) Dunnet et al. (2019): Geographies of Outer Space |                                    |  |
| 16-Jan | <b>2</b>  | Formation of the Solar System    | Formation of The Solar System    | The Formation of the Moon w/ Dr. Hill     | Rothery (2010): Chapter 1 - The Solar System  |                                    |  |
| 23-Jan | <b>3</b>  | Geography of Solar System        | Geography of the Solar System    | The Coming Year in Space w/ Dr. Stooke    | Rothery (2010): Chapters 5 & 6 - Asteroids & Trans-Neptunian Objects                          |                                    |  |
| 30 Jan | <b>4</b>  | Pre-Space Age                    | Before the Space Age             | Space & Colonialism w/ Dr. Trevino        | Lane (2006): Martian Canal Craze  | Weeks 2-3 Summary                  |  |
| 6-Feb  | <b>5</b>  | The Space Race                   | The Space Race                   | Ethics & Space w/ Dr. Handmer             | Neufeld (2002): von Braun, the SS, and Concentration Camp Labour                              |                                    |  |
| 13-Feb | <b>6</b>  | The Apollo Program               | The Apollo Program               | Those Other Apollo Missions w/ Dr. Stooke | Commander (2016): The Space for Race  | Weeks 4-5 Summary                  |  |
| 20-Feb | <b>7</b>  | <b>Reading Week</b>              |                                  |   |   |                                    |  |
| 27-Feb | <b>8</b>  | Exploring the Moon               | Robotic Exploration of the Moon  | The Moon Mission Draft                    | 1) Sagan (1991): Why Send Humans?<br>2) Goldsmith & Rees (2020) - Do We Really Need to...?    |                                    |  |
| 5-Mar  | <b>9</b>  | Martian Exploration              | Welcome to Mars                  | TBD                                       | Uhran et al. (2019): Updating Planetary Protection Considerations                             |                                    |  |
| 12-Mar | <b>10</b> | Exploring the Inner Solar System | Exploring the Inner Solar System | TBD                                       | Rothery (2010): Chapter 2 - Rocky Planets   | Weeks 8-9 Summary                  |  |
| 19-Mar | <b>11</b> | Exploring the Outer Solar System | Exploring the Outer Solar System | Blowing Up Pluto w/ Dr. Denton            | Rothery (2010): Chapters 3 & 4 - Giant Planet's Satellites & Rings                            |                                    |  |
| 26-Mar | <b>12</b> | The Future of Space Exploration  | Space Law w/ Dr. Aganaba         | TBD                                       | Tavares et al. (2020): Ethical Exploration  | Project Due (Apr 1 <sup>st</sup> ) |  |

## 7. Communication



- Students should check the OWL site every 24 – 48 hours
- Weekly updates 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 their 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 as soon as possible

## 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            | Weight | Due Date   |
|------------------|-------------------|--------|--|
| Summary 1        | .pdf (1500 words) | 15     | January 30 <sup>th</sup>   |
| Summary 2        | .pdf (1500 words) | 15     | February 13 <sup>th</sup>  |
| Summary 3        | .pdf (1500 words) | 15     | March 12 <sup>th</sup>   |
| Monthly Question | OWL Forums        | 15     | Jan 31 <sup>st</sup> , Feb 28 <sup>th</sup> , March 31 <sup>st</sup> |
| Final Project    | PPT Presentation  | 40     | April 1 <sup>st</sup>  |



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)
- 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**

[Instructors are encouraged, in the first instance, to arrange participation requirements and multiple small assignments in such a way as to allow students some flexibility. A student seeking academic accommodation for any work worth less than 10% must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline.

In arranging accommodation, instructors will use good judgment and ensure fair treatment for all students. Instructors must indicate on the course outline how they will be dealing with work worth less than 10% of the total course grade. In particular, instructors must indicate whether medical documentation will be required for absences, late assignments or essays, missed tests, laboratory experiments or tutorials, etc. Where medical documentation is required, such documentation must be submitted by the student directly to the appropriate Faculty Dean's office, and it will be the Dean's office that will make the determination whether accommodation is warranted. Given the University's Official Student Record Information Privacy Policy, instructors may not collect medical documentation.

In all cases where accommodation is being sought for work totalling 10% or more of the final grade in a course, students will be directed to the appropriate Faculty Dean's office.

Clearly define how the absence will be handled (e.g., an extension, make-up opportunity, or reweighting).

When defining the rules for excused absences, you should ensure that the essential requirements of the course are still met. For example, if the final examination is not cumulative, it would normally be advisable to offer a make-up for the midterm test rather than a reweighting to the final.

Students who have been denied accommodation by an instructor may appeal this decision to the appropriate Faculty Dean's office but will be required to present appropriate documentation.]

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](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](mailto:support@uwo.ca).

## **17. Important Dates**

Monday January 8: Classes resume

Tuesday January 16: Last day to add a second term half course

Monday February 19: Family Day – Department Office Closed

February 17 to February 25: Spring Reading Week (No classes; Department Office open)

Thursday March 7: Last day to drop a second term half course without academic penalty

Friday March 29: Good Friday – Department Office Closed

Monday April 8: Classes end

April 9 and 10: Study days

April 11-30: Examination Period