
PS9603A: Introduction to Planetary Science

FALL 2025



Presented by the Department of Earth Sciences and Department of Physics and Astronomy

As part of the Collaborative Specialization in Planetary Science and Exploration

Lead Instructor: Dr. Catherine Neish
E-mail: cneish@uwo.ca

Lectures: August 25 – 31, 2025, 9:00 am – 4:30 pm
Location: TBD

Prerequisites: No specific prerequisites are required, but previous enrollment in at least one Earth Science or Planetary Science course is generally required. Please speak to the instructors if you have any concerns or are seeking an exception.

Course Description

This is an intensive 7-day short course for graduate students, researchers, industry and government employees on planetary science. **This course is mandatory for all new planetary science graduate students at Western and should ideally be taken during the first year.** The focus of the course will be on the fundamental processes that have shaped the planets, their moons, and asteroids and comets. Some of the world's leading experts on planetary science will present half-day modules on selected topics. The course is suitable for advanced undergraduate students, graduate students, and professionals from industry and government. The course will feature both overview lectures on background theory, smaller topical study groups, as well as hands-on activities involving imagery returned from robotic orbiters and landers. Recent and ongoing planetary missions will be highlighted. The course is intended to provide the non-specialist with a working knowledge of the multidisciplinary fields within planetary science.

Course Schedule

Date	Day	Topics/Modules	Location
Aug. 25	Monday	Lecture 1: Course Introduction (C. Neish)	TBD
		Lecture 2: Solar System Formation (P. Wiegert)	TBD
Aug. 26	Tuesday	Lecture 3: Planetary Atmospheres (C. Neish)	TBD
		Lecture 4: Exoplanets (C. Neish + B. Jackson)	TBD
Aug. 27	Wednesday	Lecture 5: Spacecraft Engineering (K. McIsaac)	TBD
		Lecture 6: Astromaterials (B. Hyde)	TBD
Aug. 28	Thursday	Lecture 7: Planetary Data Sets (C. Neish)	TBD
		Lab 1: Introduction to JMARS (C. Neish)	TBD
Aug. 29	Friday	Lecture 8: Surface Processes (C. Neish)	TBD
		Lab 2: Mars Landing Site Selection (C. Neish)	TBD
Aug. 30	Saturday	Lecture 9: Astrobiology (C. Neish)	TBD
		Team Projects: Group research preparation time	TBD
Aug. 31	Sunday	Student presentations: Start at 9:30 am (C. Neish)	TBD

Detailed Time Table

9:00 – 10:30 am	Lecture and Quiz*
10:30 – 10:45 am	Break
10:45 – 12:00 pm	Lecture
12:00 – 1:30 pm	Lunch break
1:30 – 3:00 pm	Lecture/Lab
3:00 – 3:15 pm	Break
3:15pm – 4:30 pm	Lecture/Lab

**Quizzes will be held on Tuesday, Wednesday, Thursday, Friday, and Saturday. Details on quizzes are given below.*

Course Materials

To participate in this course, I recommend downloading the following software package in advance of the class:

1. **JMARS** is a free planetary GIS package, which provides instant access to planetary data for almost every object visited by spacecraft in our Solar System. It is highly recommended that you download from this link (<https://jmars.mars.asu.edu/download>). Extensive tutorials for visualizing planetary datasets, and some basic instructions on data manipulation, can be found here: <https://jmars.asu.edu/jmars-tutorials>.

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. 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.

Course Evaluation and Course Credit:

This one-week course is worth 0.5 FCE credit. Students registered in the course will be evaluated as follows:

Course component	Notes	Value
In Class Quizzes*	Quizzes will be held on Aug. 26, Aug. 27, Aug. 28, Aug. 29, and Aug. 30 . Each quiz is worth 5% of the course grade. Quizzes are open book.	25%
Laboratory Exercises	Two lab exercises, each worth 12.5% of your grade, will be assigned throughout the course. These assignments are due on November 21, 2025 at 11:59 pm. Please upload these to the appropriate link on OWL.	25%
Group Project	Groups of ~3 students will design a space mission together. Please see the Group Project description in OWL for more details.	50%

**A short quiz will be administered during the first 10-15 min of class. Responses must be handed in by 9:30am to receive credit.*

Special notes on course credit:

Students from any university are eligible to take the course and may receive credit in their respective institutions, subject to approval from their home Department. If you are a Western student who seeks permission to take this graduate level course (*i.e., its*

outside your major/program), you will need to fill out this form to get the relevant approvals to receive a grade in the course:

https://grad.uwo.ca/doc/academic_services/course/course_outside_program.pdf

If you are a non-Western student, but from a University in Ontario, we advise that you use an equivalent of this form from your home university:

https://grad.uwo.ca/doc/academic_services/visiting_exchange/Ovgs%20Form%202016.pdf

You must also inquire of your home institution if there are any additional steps to take for receiving full-credit for the course. For instructions on submission of this form, please contact the Earth Sciences department at askearthsci@uwo.ca.

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.

Student Absences:

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

Assessments worth less than 10% of the overall course grade: Please contact the course instructor to discuss an extension or make-up opportunity.

Assessments worth 10% or more of the overall course grade: For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the following website:

https://www.uwo.ca/sci/advising/procedures/academic_consideration_for_absences/index.html

After receiving the documentation, students will be eligible for an extension or make-up opportunity.

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

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.

Academic Policies:

Academic Honesty: 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.

Students must write their assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge this both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence. APA style is the approved style of writing for all assignments produced for this course. Please refer to the University of Western Ontario Library webpage for information on citation style and format or consult the APA publication manual: Publication manual of the American Psychological Association (6th ed.). (2009). Washington, DC: American Psychological Association.

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>).

Classroom Behaviour: Disruptive behavior will not be tolerated in class or on the course website. Please respect the rights of your classmates to benefit from the lecture by limiting your conversations to those essential to the class. Students who persist in loud, rude or otherwise disruptive behavior will be asked to leave. Cellular phones, pagers, and text-messaging devices are not to be used in class and must be placed in silent mode. Laptops for the purpose of typing lecture notes are permitted in class, but please be respectful to your fellow students and turn the sound off. Audio and/or videotaping of lectures is not permitted unless approval has been sought from the instructor in advance.