

EES346-001 Exploring Mars

Online, Spring, 2026

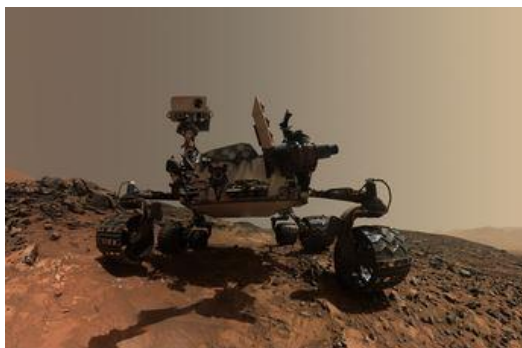
CRN 63798 (4 credits)

Location:

Canvas platform, Portland State University
(all content): <https://canvas.pdx.edu>

Course web page (copy of syllabus, with announcements as needed):

<https://web.pdx.edu/~ruzickaa/EES346/index.html>



Instructor: Alex Ruzicka (contact through Canvas)

Teaching Assistant: Caitlin Fernando (contact through Canvas)

Informal Course Description: This on-line course focuses on the ongoing exploration of Mars. Topics include a historical perspective, impact cratering and what it can tell us, minerals and rocks on Mars as studied remotely and from the surface and as meteorites, volcanoes, tectonic features, and how these relate to the interior of the planet, sedimentary materials, channels, crater lakes and shorelines, ice and high-latitude landforms, and the search for life. Although this course emphasizes research discoveries and exploration, each week features a “personal touch” about the people who have contributed to discoveries, the exploration effort, or who have some connection to the planet. These people come from a variety of backgrounds and have a diversity of talents, and their stories will be provided along with science and exploration.

Course outcomes/learning objectives: After participating in this course, students will be able to correctly identify selected geological features and processes and historical events that occurred in the exploration of Mars, as well as some of the people who have a connection to the Red Planet.

Pre-requisites: None, although introductory geology (G201 or G202) is recommended. However, everything you will need to know will be provided, and the course is open to all.

Text: None. Content will be delivered through Canvas and through online resources. Unless content is specifically noted as “optional”, you will be responsible for it. This means text, figures, figure captions, and videos—anything provided in the Canvas modules—is part of the course content. Important vocabulary is highlighted in bold **red-brown text**, and other important conclusions are given in **bold black text**. Pay special attention to these items.

Weekly schedule: This course is organized around course weeks, which are 8 calendar days starting at 12:01 AM Monday of each week and ending at 11:59 PM on Monday the following week. For each week, there is a module that will contain reading and video content. There will be a weekly quiz, and a weekly discussion posting and reply, for Course Weeks 1-9; with Week 10 reserved for time to do a wrap-up project. There will be no Final Exam.

Quizzes: There will be weekly quizzes that will be made available one week at a time, starting at the beginning of each Course Week. Each quiz will consist of 10 multiple choice questions. Students will have 45 minutes to complete each quiz, and two attempts, with the best score of the two attempts used for the weekly quiz score. For the course, the lowest weekly quiz score will be dropped. This means that only the best 8 of 9 quizzes will be used for your grade. *Because the lowest score is dropped, and because it is important for course management that everyone in the class is working on the same schedule, quizzes will not be “reopened” for individuals after the end*

of the Course Week. However, if you have a medical or family emergency that will cause you to miss more than one Weekly Quiz, please contact the instructor as soon as possible. Questions will be pulled randomly from a question bank. This means that you may get different questions in each attempt. But you should budget enough time for two quiz attempts, and this can improve your score. Two types of multiple-choice questions have been prepared. Some (“choose one answer” type) have only one best answer, and these will be easier questions. Others (“choose all that apply” type) can have one or more correct answers, and these will be more challenging and will require a more complete understanding. To get this type of question completely correct, students will have to choose all the correct answers and no incorrect answers; partial credit will be given for answers that are more correct than incorrect according to an algorithm in Canvas. To do well on the quizzes, you will need to read and watch all the content that is provided and spend some time carefully thinking about the questions. However, these are essentially “open book” questions, and if you have spent time with the material and are prepared, this will help boost scores.

Discussion Postings: There will be weekly discussion postings, together with two replies you make to the postings of others. Except for Week 1, which will have Introductions, other postings will consist of finding images of certain kinds and providing certain specified information about these images. Spacecraft exploration of Mars has resulted in hundreds of thousands of images that can be found on the web, and this assignment will let you make your own discoveries and share these with others in the class. For each week, a new discussion assignment will be made available at 12:01 AM on Monday, with an initial posting due by 11:59 PM on Friday. Replies to postings will be due by the end of the Course Week at 11:59 PM the following Monday. These postings and replies will be graded by the TA. For the course, the lowest score for the weekly posting/reply will be dropped. *This means that only the best 8 of 9 postings/replies will be used for your grade. Like the weekly quizzes, it also means that postings will be limited to the course week in which they are assigned, and if you have a medical or family emergency that will cause you to miss more than one Weekly Discussion, you should contact the instructor.* To do well on the weekly postings, you will have to spend some time making postings, gathering online materials as needed. So long as you make enough time for it, and follow the directions, this can be a fun assignment (more fun than the quizzes!) and you should do well on it.

Wrap-up assignment: Students will do a wrap-up assignment in Week 10 that will serve as a review of the course. This will be used by the instructor as an assessment of how well students learned material and how the course can be improved. It will take the place of a Final.

Grades: G346 grades will be determined from performances on:

Quizzes (best 8 of 9)	40%
Weekly Discussions & Replies (best 8 of 9)	40%
Wrap-up Assignment	20%

Grades will be assigned based on total scores as follows: 93% or above = A, 90-92.99% = A-, 87-89.99% = B+, 83-86.99% = B, 80-82.99% = B-, 77-79.99% = C+, 73-76.99% = C, 70-72.99% = C-, 67-69.99% = D+, 63-66.99% = D, 60-62.99% = D-, less than 60% = F. I generally do not give “I” grades. This class can be taken Pass/No Pass. If you elect to change your grading option, please inform me by course email. Letter grades will correspond to the standards given in the PSU course catalog. Grading is done on a straight scale although curves will be used at my discretion. *Curves will probably be used for the total quiz score, so don't panic if your quiz grades aren't what you want them to be, as they will depend on how you measure up relative to others in the class.*

Expectations: Students sometimes consider online courses to be easy. Certainly, this course will be flexible in that learning can occur anywhere at any time. And there isn't a term project or Final, so you won't be hammered at the end. But don't be fooled, it won't be trivial. The course covers a lot of ground, centering on geology and astronomy, with a little biology thrown in. The expectation I would recommend for this course is as follows: treat it like an in-person 4 credit science course that

will require a similar amount of effort to complete. This means you can expect to spend maybe 4 hours each week engaging with (reading, watching) the content, depending on your reading speed. On top of this, you need to budget enough time to take the weekly quizzes, and to do the Discussion posting “homework”. If you allocate sufficient time and do your best, you can and should succeed in this course and have some fun with it! And like with everything else, what you get out will depend on what you put into it.

Course flexibility statement: The instructor reserves the right to make changes based on unexpected events. Any changes to the course beyond what is stated in the Syllabus will be announced on the course homepage in Canvas and website.

Recording technology notice: Any technology used for virtual meetings and recordings in this course is governed by FERPA, the [Acceptable Use Policy](#) and PSU’s [Student Code of Conduct](#). A record of all meetings and recordings is kept and stored by PSU. The instructor will not share recordings of your class activities outside of course participants, which include your fellow students, TAs/GAs/Mentors, and any guest faculty or community-based learning partners that we may engage with. You may not share recordings outside this course. Doing so may result in disciplinary action.

Turnitin: Students agree that by taking this course all required submissions may be subject to review for textual similarity for the purpose of detecting unoriginal writing, including plagiarism. All submitted assignments will be included as source documents in the [Turnitin.com](#) reference database solely for the purpose of detecting unoriginal writing, including plagiarism of such papers. Use of the Turnitin.com service is subject to the Turnitin Acceptable Use posted on the Turnitin.com website.

Other policies: (a) If you feel you have a disability and need an accommodation, contact the Disability Resource Center (drc@pdx.edu, 503-725-4150). (b) Each student is responsible for all the content covered online and in the weekly meetings. (c) A culture of professionalism and mutual respect is expected. Any incident of discrimination or discriminatory harassment, including sexual harassment, can be reported to the Office of Equity and Compliance, or the Office of the Dean of Student Life. For resources, see <http://www.pdx.edu/sexual-assault/get-help> . The instructor is obligated to report incidents of discrimination, sexual harassment, sexual assault, dating/domestic violence and stalking to the University Title IX Coordinator. (d) Students are expected to follow PSU policies for academic integrity, which means not engaging in academic misconduct; see <https://www.pdx.edu/dos/academic-misconduct>. Examples of misconduct include cheating on an exam, copying someone else’s work, submitting for credit work done by someone else, or knowingly and intentionally assisting another student in any of the above. (e) “Extra credit” will not be considered for this course. (f) This syllabus is a written contract between you and your instructor. Please read it carefully and contact your instructor if you need further clarification. If you decide to continue this course, it means that you have thoroughly read the syllabus and accept all requirements as stated.

TENTATIVE COURSE OUTLINE (see course website and Canvas for changes)

	Content	Online (see Canvas for specifics)	Personal Touch
Week 1	Module 1: Our changing view of Mars	Watch/read Week 1 module, make a discussion posting and two replies	Octavia Butler
Week 2	Module 2: Impact cratering and what it tells us	Watch/read Week 2 module, make a discussion posting and two replies	A Tale of Two Couples: Jay Melosh & Ann Vickery, Gene & Carolyn Shoemaker

Week 3	Module 3: Minerals and rocks on Mars	Watch/read Week 3 module, make a discussion posting and two replies	Who names those rocks? The story of Máaz
Week 4	Module 4: Volcanoes, tectonics, and the interior of Mars	Watch/read Week 4 module, make a discussion posting and two replies	Baerbel Lucchitta
Week 5	Module 5: Sedimentary materials and aeolian processes	Watch/read Week 5 module, make a discussion posting and two replies	Arthur C. Clarke and the Sands of Mars
Week 6	Module 6: Channels	Watch/read Week 6 module, make a discussion posting and two replies	Vic Baker and J. Harlen Bretz
Week 7	Module 7: Crater lakes and shorelines	Watch/read Week 7 module, make a discussion posting and two replies	Behind the spacecraft Perseverance
Week 8	Module 8: Ice and high-latitude landforms	Watch/read Week 8 module, make a discussion posting and two replies	James Head
Week 9	Module 9: Searching for life on Mars	Watch/read Week 9 module, make a discussion posting and two replies	Carl Sagan
Week 10	Module 10: Wrap-up assignment	Answer questions about the course online	
Finals	None. Get ready for the summer!		