**Course Outline – Planet Mars**

**Fall 2021**

**Tuesday: 5:00 PM – 6:20 PM**

**Thursday: 5:00 PM – 6:20 PM**

**Instructor: Dr. Lujendra Ojha**

**Email:** **Luju.ojha@rutgers.edu**

**Office Hours: Tuesday (2:00 to 3:00 PM) and Thursday: (12:00 to 1:00 PM)**

**WebEx Link:** **To Be Updated**



**Course overview:** Welcome to Mars! The days are slightly longer, and it is a bit cold outside. This course is designed to give you an overview of the Planet Mars. We will combine synchronous lectures with hands-on activity to understand the formation and evolution of the red planet. We will split the class between lectures and hands-on activity to break the monotony. In addition to regular lectures, we will look at cool images of Mars and analyze data from various satellites and landers. We will use two main tools to look at data from Mars: Google Earth and JMars. The goal here is to provide you with an actual experience of what it is like to be a Mars scientist. We will combine a little bit of physics, mathematics, astrophysics, earth science, atmospheric science, chemistry, and biology to understand the formation, evolution, and habitability of Mars. We will only use basic algebra, so you don’t have to be a math savant to take this class. The class will be held on Tuesdays and Thursdays. We will use Zoom and/or WebEx for office hours.

**Prerequisites:** None.

**Course Expectation:** *Basic Class Etiquette:* Respect yourself, your peers, and your teacher. Pay attention, participate, and ask questions. Come to class with positive learning attitude. Student actions that interfere with teaching or learning in the classroom will NOT be tolerated.

**Assignments:** Do your best work and turn it in time. We all have bad days (or even weeks), so you get two free passes. You can redeem your “late assignment pass” for up to a week. If you do not use your two free passes, you can redeem them for 5 points each at the end of the semester. Please do not cheat, plagiarize, or copy work. If I find any evidence of cheating, I will give you *ZERO* and report the incident.

**Textbook:** None required for the class.I will provide you texts.

**In-Class Activity:** ~5 – 7 in class activity worth 20% of your grade.

**Homework:** There will be ~5 homework assignments worth 20% of your grade.

**Exams:** Midterm = 20% of your grade. Final = 20% of your grade. Total = 40%.

**Class Project:** 20% of your grade. Total = 20%.

**Grades:**

**A = 89.5 – 100**

**B+ = 84.5 – 89.49**

**B = 79.5 – 84.49**

**C+ = 74.5 – 79.49**

**D = 59.5 – 69.49**

**F = 0 – 59.49**

|  |  |  |  |
| --- | --- | --- | --- |
| **Day** | **Date** | **Agenda** | **Structure** |
| Thursday |  September 2 | Course overview. Introduction to Google Mars + JMars | Lecture + Demonstration |
| Tuesday |  September 7 | How did the Universe form?  | Lecture + Activity |
| Thursday |  September 9 | How did the planets in the solar system form?  | Lecture |
| Tuesday |  September 14 | The History of Mars Exploration | Lecture |
| Thursday |  September 16 | How do we get to Mars? Rocket Science! | Lecture + Activity |
| Tuesday |  September 21 | Meteorites from Mars  | Lecture |
| Thursday |  September 23 | Electromagnetic Spectrum and Satellite Observation of Mars | Lecture + Activity |
| Tuesday |  September 28 | Impact craters on Mars | Lecture |
| Thursday |  September 30 | Crater Data Analysis on Jmars | Lecture + Activity |
| Tuesday |  October 5 | Volcanism on Mars | Lecture |
| Thursday |  October 7 | Volcanism Data Analysis on Jmars | Lecture + Activity |
| Tuesday |  October 12 | Dust, wind, sands on Mars | Lecture |
| Thursday |  October 14 | Dune analysis on Jmars | Lecture + Activity |
| Tuesday |  October 19 | Water on Mars - I | Lecture |
| Thursday |  October 21 | Water on Mars - II | Lecture |
| Tuesday |  October 26 | Midterm Review | Review |
| Thursday |  October 28 | Midterm  | Midterm |
| Tuesday |  November 2 | Highlights from the First Half  | Lecture |
| Thursday |  November 4 | Martian Climate and Changes Over Martian History | Lecture |
| Tuesday |  November 9 | The Polar Caps of Mars | Lecture |
| Thursday |  November 11 | Jmars Analysis of Polar Caps on Mars | Interactive Activity |
| Tuesday |  November 16 | The Internal Structure of Mars | Lecture |
| Thursday |  November 18 | The Moons of Mars | Lecture |
| Tuesday |  November 23 | Habitability of Mars | Lecture |
| Tuesday |  November 30 | Humans on Mars: Motivation and Challenges | Lecture + Interactive Activity |
| Thursday |  December 2 | Project Presentation | -- |
| Tuesday |  December 7 | Project Presentation - II | -- |
| Thursday |  December 9 | Final Review | -- |

**Exams:** No unexcused make-up exams will be given without WRITTEN documentation from a Rutgers University official. Those with valid excuses will be allowed to take exams at a different time.

**Masks:** In order to protect the health and well-being of all members of the University community, masks must be worn by all persons on campus when in the presence of others (within six feet) and in buildings in non-private enclosed settings (e.g., common workspaces, workstations, meeting rooms, classrooms, etc.). Masks must be worn during class meetings; any student not wearing a mask will be asked to leave.

Masks should conform to CDC guidelines and should completely cover the nose and mouth: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-facecoverings.html>

Each day before you arrive on campus or leave your residence hall, you must complete the brief survey on the My Campus Pass symptom checker self-screening app.

**Attendance:** Students are expected to attend class. We will engage in numerous in-class activities, and if you are not here, you may have a hard time completing the activities on your own. However, if you have been told to quarantine, or are experiencing symptoms of any transmittable disease, please remain at home and do not attend in-person class meetings. Please let me know ahead of time, if possible, and I will send you a video of the lecture.

**Tardiness and Leaving Class Early:** Habitually arriving in class late and departing early is disruptive and rude. We ask that once you make every effort possible to get to class on time, and once there, STAY.

**Academic Integrity:** All students are responsible for upholding the highest standards of student behavior, as specified under the University Code of Student Conduct (<http://studentconduct.rutgers.edu/>) , including but not limited to strict adherence to the terms of the University’s Academic Integrity Policy (<http://academicintegrity.rutgers.edu/>).

I do not tolerate cheating. If you are caught cheating, I will give you ‘0’ for the assignment and give you an official warning. If I catch you cheating again then I WILL fail you and report you.

**Your Rights:** If you feel that you have been treated unfairly, contact the department chair, Dr. Gregory Mountain (gmtn@eps.rutgers.edu)