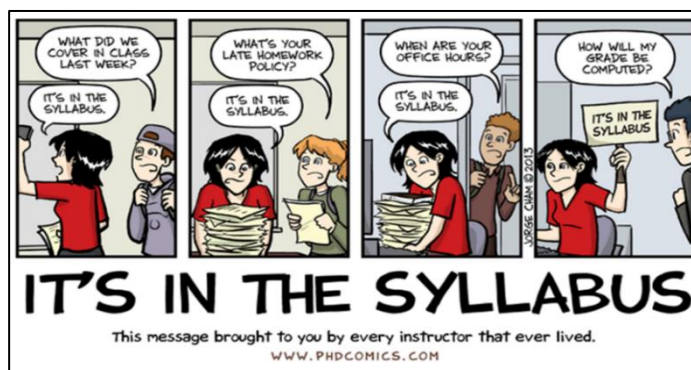


## SYLLABUS: 460-222 — Planet Mars



**Description:** This course is an introduction to the geology of the planet Mars. Topics include the history of information on the planet and the impact of the technological advances on our understanding of the planet.

**Learning Goals:** Students will learn the key concepts needed to integrate the current exploration of planet Mars into their understanding of the scientific discovery on the Earth and beyond.

This course satisfies SAS Core Curriculum Goals:

I: Areas of inquiry (Natural Sciences)

II: 21<sup>st</sup> Century Challenges (Contemporary Challenges)

**STUDENTS WILL BE ABLE TO:**

- Understand and apply basic principles and concepts in planetary science.
- Explain and recognize the development of historic ideas about, and modern interpretations of, remote sensing and sample studies of the Planet Mars.
- Understand the methods, evidence, hypotheses, and theory of the evolution of Mars that result from ~50 years of scientific exploration of the most earthlike planet that will be developed
- Identify and critically assess societal issues in the pursuit of technologically challenging scientific exploration.

**No prerequisites** (the course is accessible to a wide range of students and the goals have not been met by prerequisites)

**Instructors:** Dr. Nicole Lunning

*Office* Wright Geological Laboratory/chemistry; room 315

*E-mail* [nicole.lunning@rutgers.edu](mailto:nicole.lunning@rutgers.edu). *Emails will be answered during working hours (9am – 5pm) and I will try my best to respond within 2-3 business days.*

**Office Hours:** Tuesdays: 1pm-2:30pm; or by previously arranged appointment by email and confirmation (at least 24 hour in advance).

**What I expect from you:**

- 1) You have read the syllabus and keep a copy of it for your referral.
- 2) Be respectful towards your professors and your fellow students. Any behavior that disrupts the class and other students' learning will not be tolerated.
- 3) On average, you should spend 2-3 hours on your own (reading, studying, making notes, working on assignments, etc.) for every hour you are in class.
- 4) You will share your personality, knowledge, skills, and special expertise with the rest of us throughout this class.

**What you can expect from me:**

- 1) We will give you the respect that we ask you to give us and other members of this class.
- 2) We will do our best to help you, but we cannot learn the material for you.
- 3) We will encourage you and be receptive to constructive comments about our teaching.

**Attendance:** All students must attend all classes, arrive on time, remain in class until the end of the class period, and participate in class discussions. *Cell phones must be turned off in class; No computers allowed.*

**Communication:** All out-of-class communication must be conducted via your official Rutgers email and/or Sakai. Announcements will be sent to your Rutgers email address and you are responsible for checking your email at *least once a day* on weekdays. Based on University policy, your instructors are only supposed to email your Rutgers address; I cannot email you at non-Rutgers addresses (emails from other addresses will be discarded unread). You are responsible for uploading your homework to Sakai on time. You will be able to view your scores for assignments and exams on Sakai. As soon as grading has been completed, I will post scores on Sakai. You are responsible for looking at Sakai to check your grades throughout the semester.

**Recommended texts:**

- *A Traveler's Guide to MARS* (W.K. Hartman) 2003 Workman Publishing.
- *Planet Mars- Story of another world* (F. Forget, F. Costard, P. Lognonné) 2008 Springer

**Grading Policy (in %):**

A: 89.5-100; B+: 84.5-89.49; B: 79.5-84.49; C+: 74.5-79.49; C: 69.5-74.49; D: 59.5-69.49; F: 0-59.49

Grading is based on a point system, with 500 points that can be earned:

- ❖ **Minute paper/thinking questions/responses in class/attendance:** 8% of final grade (40 points total; 2 points per lecture)
  - Willingness to ask questions, answer question when called upon.
  - Actively participating in the class/group exercises and discussions.
  - Willingness to include and interact with a variety of classmates
  - Negative points for texting, sleeping, or not paying attention.
- ❖ **Homework – Discussion Questions:** 25% of final grade (125 points total)
  - There will be 8 discussion questions and out-of-class activities posted on Sakai as homework assignments.
  - Homework assignments are due at the beginning of class on their due dates, unless specified otherwise.
  - Work with a partner is ok but **DO NOT COPY** your partner's work
- ❖ **Homework – Projects:** 24% of final grade (120 points total; worth 40 points each)
  - There will be 3 assignments during the semester; they are due on the date that will be posted with the assignments.
- ❖ **LATE HOMEWORK** (without prior arrangement with professor or extreme justification): 2.5 point off after 1 day (submitted within a 24 hour period of assignment date etc.), 5 points off after 2 days; 7.5 points off after 3 days; homework handed in 4 days late will be an F (0 points).
- ❖ **Exams:** 43% of final grade (215 points total; each exam is worth ~72 points each on average) – multiple choice, true/false, short answer, put things in order, fill-in the blanks, etc.
  - There will be 3 exams during the semester worth 70, 73, and 72 points (= 14% on average).

Please note: **NO MAKEUP EXAMS** without written permission of appropriate University official as per departmental policy (see below). Arrangements for a makeup exam must be made **BEFORE** the original exam date!

The exam will be a “closed-book” exam, but you will be permitted to bring a cue-card of the size: 3 x 5 inches that contains **HANDWRITTEN** notes; you are allowed to write on both sides.

For assignments requiring a written answer: **All answers must be typed.** You must use complete sentences, *and give the reason for your answer.* **Grammar, spelling, and writing style will be graded along with content.** There will be no extra credit given in this class.

**Plagiarism/Cheating Policy:**

Plagiarism includes: (1) passing off the work of others as your own; and (2) failure to acknowledge properly the source of ideas, information, facts, figures, drawings, etc., that are not your own. **Plagiarism is a serious academic offense, and will be dealt with severely!**

If you are found cheating on a test or plagiarizing on homework, you will receive a zero for that test or assignment. If a second incidence occurs you will fail (i.e., **AUTOMATICALLY receive an F**) for this class. The cheating policy also includes the use of iclickers to misrepresent attendance and/or participation. You may work together on homework **BUT DO NOT COPY!** Make sure your work can stand alone (i.e. different enough to not look like it was simply copied) and acknowledge your collaborators like a professional.

**Disability Access:**

If you have a disability and related access needs the Department will make every effort to assist and support you. For confidential services students are encouraged to contact the Office for Students with Disabilities:

Office of Disability Services-New Brunswick  
Lucy Stone Hall, Suite A145  
Livingston Campus  
54 Joyce Kilmer Avenue  
Piscataway, NJ 08854-8045  
Phone: 848.445.6800  
Fax: 732.445.3388  
E-mail: [dsoffice@echo.rutgers.edu](mailto:dsoffice@echo.rutgers.edu)  
URL: <https://ods.rutgers.edu/>

**The Rutgers Learning Center aims to help students**

1. use appropriate study skills to achieve academic goals.
2. learn how to adjust learning approaches to fit their individual learning needs.
3. learn how to study effectively with others.
4. use effective learning practices.
5. use self-reliant learning behaviors.
6. have a functional understanding of course content.

<https://rlc.rutgers.edu/>

**Schedule (by classes) – subject to change**

<b>Class</b>		<b>Topic</b>	<b>Homework</b>
1	9/3/2019	Introduction	
2	9/5/2019	Mars facts & Mars across human history	Video Introduction
3	9/10/2019	Mars in the Solar System 1: Big Bang, Nucleosynthesis, Star Formation and Death	Syllabus Quiz in Class*
4	9/12/2019	Mars in the Solar System 2: Molecular clouds, Formation of the Solar System, Condensation and Accretion	Big Bang
5	9/17/2019	Martian meteorites 1	
6	9/19/2019	Martian meteorites 2	Meteorite Essay
7	9/24/2019	Review before exam	RU Museum
8	9/26/2019	First Exam	
9	10/1/2019	Missions to Mars 1: Earlier orbiters and landers	
10	10/3/2019	Missions to Mars 2: Past rovers - Spirit and Opportunity	Past Missions to Mars
11	10/8/2019	Missions to Mars 3: Recent missions - MSL and InSight, Mars 2020 sample return	
12	10/10/2019	Major geological and morphological provinces on Mars 1: Volcanoes, Canyons	Google Mars
13	10/15/2019	Major geological and morphological provinces on Mars 2: Crustal dichotomy, Impact basins, Highland Paterae	
14	10/17/2019	Impact Processes, Cratering, and Telling time on Mars	Telling Time
15	10/22/2019	Review before exam	Cratering Activity
16	10/24/2019	Exam 2	
17	10/29/2019	Martian climate and changes over martian history	
18	10/31/2019	Aeolian Processes	Aeolian Processes
19	11/5/2019	Water & Ice on Mars	
20	11/7/2019	Landing sites, defining goals	Travel Blog
21	11/12/2019	Habitable zones, life in extreme environments	
22	11/14/2019	Moons/Mars the next frontier	
23	11/19/2019	Review before exam	Future Missions
24	11/21/2019	Exam 3	
25	11/26/2019	Closing activity (in-class)*	
<i>Class Finished</i>		<i>Dr. Lunning en route to Antarctica</i>	

\*Extra credit points can be earned (7 points/each). These two activities and an extra component of the cratering homework activity will be the ONLY extra credit offered in this class.

**Policy on Classroom Etiquette**  
**Department of Earth and Planetary Sciences**  
**Rutgers, The State University of New Jersey, Piscataway, NJ**

The Department of Earth and Planetary Sciences is committed to teaching excellence, fostering close interaction between students and faculty. We demand that instructors AND students display appropriate respect and consideration for each other. Instructors should try to infuse students with an enthusiastic appreciation of the science, be well prepared for class, provide students with clear goals and expectations, listen carefully to student questions and comments, and conscientiously evaluate students' work. Students are expected to attend the scheduled classes and to behave courteously in class. Together, instructors and students will maintain an environment of openness and civility that encourages and honors the intellectual achievement represented by the discipline of Earth and Planetary Sciences. We outline the following rules on exams, attendance, tardiness/leaving early, and integrity.

*Exams:* Every effort must be made to take exams when scheduled. 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 in a method determined by the instructor.

*Attendance:* Students are expected to attend class; attendance is one of the best prognosticators of a student's performance. If a student cannot attend a class or must leave early, he/she should inform the instructor and ask to be excused. Instructors may require signed attendance sheets and may count attendance as part of the grade.

*Tardiness and Leaving Class Early:* Our University is geographically challenged. Students must commute considerable distances between classes, and instructors are aware of problems that students encounter in trying to come to class on time. Students should try to not schedule courses on different campuses in adjacent periods. We recognize that some tardiness is inevitable; HOWEVER, 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.

*Personal Conversation:* It is rude and disruptive to engage in personal conversation during class. Students who persist in this disruptive behavior may be asked to leave the class and may be penalized as absent. Refusal to leave class once requested will result in disciplinary action at the Dean's level. **Cell phones must be turned off in class.**

*Academic Integrity:* Our department fully endorses a no-tolerance cheating and plagiarism policy. If you are caught cheating, the instructor may fail you and request disciplinary action.

*Your Rights:* We are all human and instructors and students both make mistakes. If you feel that you have been treated unfairly, contact the department chair, Dr. Gregory Mountain.

*Modified from policy of the Department of History, Rutgers, The State University of NJ  
Voted on as Departmental Policy by on January 17, 2000*