Course Syllabus
UHON351 – Spring Semester 2015
Mars, our next home?

Instructor: Dr. Eric C. Ferré
Office: 301B Parkinson Lab - MC4324
Office Hours: M12-2, W8-9, F9-10 or by appointment
Phone: (618) 453-7368
Email: eferre@geo.siu.edu
Web page: http://www.geology.siu.edu/people/ferre.html

Classes: Monday 11.00-11.50 am Parkinson 110
        Wednesday 11.00-11.50 am Parkinson 110
        Friday 11.00-11.50 am Parkinson 110

Detailed course description: “UHON351 Mars, our next home?” is a planetary science course designed to stimulate creative thoughts on a hypothetical colonization of planet Mars for both science and non-science major students. The objectives of the course are to familiarize students with the geology of Mars, its resources and the physical/chemical conditions that would support permanent human presence on the red planet. This course, multi-disciplinary by nature, includes introductory aspects of earth sciences, biology, physics, chemistry and environmental engineering.

Student learning objectives:
1. Students will be able to explain the main differences between Earth and Mars environments.
2. Students will be able to construct an argument for or against the past existence of life on Mars.
3. Students will be able to assess in a quantitative manner the existing physical and chemical conditions on Mars that would be suitable for permanent human presence.
4. Students will have a working knowledge of Mars physiography and will be able to justify their choices of location for permanent human occupation.
5. Students will develop planning and training strategies for colonization experiments on Earth.

Schedule/outline of topics and learning experiences
1. History of the exploration of Mars by the United States, the Soviet Union, and Europe
2. The characteristics of Mars and its planetary scale surface provinces
3. The interior of Mars and its impact on surface processes
4. The lithosphere of Mars
   - Craters and basins and the impact crating process
   - What is the Influence of the atmosphere and subsurface ice and water?
   - Volcanic activity / igneous processes
   - Why are volcanoes so large?
   - Tectonics and mountain building
   - The giant Tharsis Rise
5. The Martian atmosphere and hydrosphere
   - Where is the water?
   - The atmosphere and polar caps
   - Martian rivers and oceans: where did the water go and when?
   - Winds and surface change: the Martian dunes and deserts.
6. Martian History
   - Epochs of change: what went "wrong" and why?
7. Life on Mars yesterday and today
   - What is the evidence?
   - Where do we look?
   - How do we determine for sure?
8. Physical and chemical conditions supportive of permanent Mars occupation
9. Terraforming (or not) Mars and its challenges
10. Terrestrial experiments that could improve the chances of successful human colonizat—
on of Mars
11. Scientific critique of cinema productions on the theme of Mars

In addition to the series of 42 lectures delivered by Ferré, three guest lectures will be given by
three SIU Geology faculty on their current research on Mars (Le ticariu, Filiberto and Potter-
McIntyre).

List of texts or other reading materials
   warm with new super greenhouse gases. Proceedings of the National Academy of Sciences

Description of grading scheme/rubric
All graded material should be labeled with student name, student ID number and date.
Two mid-term exams and one final exam will be given during the semester. All examinations will
be comprehensive. Attendance at the final exam is mandatory.
Point percentage
mid-term exam 1 15%
mid-term exam 2 15%
term paper 1 10%
term paper 2 25%
final exam 35%

Description of how this course provides a unique educational experience, appropriate for
Honors students at SIUC
• Questions and comments during the lecture period are welcome and encouraged.
• Each assignment will place students in working groups of three students where they will
   compete for the best ideas or the best plan.
• Lecture notes and additional reading assignme—nts will be provided one week in advance to
   stimulate interactive participation of students in class.

SIU Carbondale emergency procedures
Emergency Procedures. Southern Illinois University Carbondale is committed to providing a
safe and healthy environment for study and work. Because some health and safety
circumstances are beyond our control, we ask that you become familiar with the SIUC
Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on
BERT’s website at http://www.bert.siu.edu Department of Safety’s website http://www.dps.siu.edu
(disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to
each type of emergency. Instructors will provide guidance and direction to students in the
classroom in the event of an emergency affecting your location. It is important that you follow
these instructions and stay with your instructor during an evacuation or sheltering emergency.
The Building Emergency Response Team will provide assistance to your instructor in evacuating
the building or sheltering within the facility.