Instructor: Dr. Michael Bizimis

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NOTE: IF you email me a question related to class, please put in front of your message subject “GEOL 521”. Or use Blackboard to email me. This ensures a quicker response.


Course Description: Fundamentals of Theoretical Geochemistry, Thermodynamics, principles and applications of chemistry in understanding Earth. The course will cover the following (not the full list):
- Properties of the elements
- Nucleosynthesis, Cosmochemistry, principles of isotope geochemistry.
- Basic Thermodynamics and applications in Earth Sciences
- Solid earth geochemistry: Core, Mantle, Crust, atmosphere formation
- Aquatic chemistry
- Examples of instrumentation, data collection and analyses.

Learning Outcomes: Upon the completion of this course the student should:
- Understand the fundamentals of geochemistry and its relevance in earth processes.
- Apply knowledge of chemical processes to real earth problems through homework and problem solving
- Analyze and evaluate geochemical data

Textbook: This class will be based loosely on the textbook “Geochemistry” by William M. White (Wiley, 2013). Can be found at Wiley Publishers, or other online retailers.

Note: The textbook is not strictly required, but if you are serious about geochemistry and future studies, you need a copy of this one.

Other relevant textbooks:
- Principles of Geochemistry, by Giulio Ottonello, Columbia University press (extremely detailed, lot’s of thermodynamics, heavy read)
- Geochemistry, an Introduction, by Francis Albarede, Cambridge. Good, basic
geochemistry handbook.
- Introduction to Geochemistry, by Krauskopf and Bird: Textbook in Geochemistry, excellent reference.

There are additional introductory Geochemistry books that can be useful reference materials.

**Grading Policy:**
There will be three take-home exams assignments (25% each) and a final paper (6 pages, for the graduate students only) with presentation (25%). For the graduate students: There will be larger number of questions in the homework exams than for the undergraduate students. Note that only the graduate students need to write a paper, but both graduate and undergraduate students will give a 12 minute presentation. The subject of the paper and presentation will be chosen in consultation with the instructor.

This class abides by the academic dishonesty policy of USC that I know you all read and agree with completely as written.
http://www.sc.edu/policies/staf625.pdf

**American with Disabilities Acts (ADA) statement:** This University and its faculty will make every effort to accommodate any and all students with special needs.
http://www.sa.sc.edu/carolinacomunity/stdev.htm#Disability%20Discrimination

**Attendance Policy:** According to the USC Undergraduate Academic Bulletin: “Absence from more than 10 percent of the scheduled class sessions, whether excused or unexcused, is excessive “. It is recommended that students adhere to that policy.