EAS 6560 Isotope Geochemistry
Syllabus Spring 2011

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Office Hours: basically anytime except Tu/Th mornings

Text: WMW Lecture Notes

Grades:
30% Prelim
40% Final
30% Problems Sets (there will be 4 to 6)

Information on the course, lecture notes, and problem set solutions are posted on the World Wide Web at:
http://www.geo.cornell.edu/geology/classes/Geo656/656home.html

Part I: Radioactive and Radiogenic Isotope Geochemistry
A. Physical Fundamentals
1. Introduction, Physics of the Nucleus, Radioactive Decay
   Jan 25
2. Physics of the Nucleus, Radioactive Decay
   Jan 27

B. Geochronology
3. Equations of Radioactive Decay and Radiogenic Growth
   Feb 1
4. The K-Ar System
   Feb 3
5. The Rb-Sr & Sm-Nd Systems
   Feb 8
6. U-Th-Pb System
   Feb 10
7. Short-lived Isotopes of the U-Th Decay Series
   Feb 15
8. Lu-Hf, Re-Os & Other Decay Systems
   Feb 17
9. Cosmogenic Isotopes (\(^{14}C, {^{36}}Cl, {^{10}}Be, \text{etc.}); Fission Track Dating
   Feb 22
10. Analytical Methods
    Feb 24

C. Radiogenic Isotope Geochemistry
11. Cosmochemistry and Cosmochronology
    Mar 1
12. Cosmochemistry and Cosmochronology II
    Mar 3
13. Isotope Geochemistry of the Earth's Mantle
    Mar 8
14. PRELIM EXAM
    Mar 10
15. Evolution of the Mantle and Crust
    Mar 17
16. Evolution of the Continental Crust; Subduction Zones
    Mar 29
17. U-Series Isotopes and Melt Generation
    Mar 31
18. Evolution of the Atmosphere
    Apr 5

Part II: Stable Isotope Geochemistry
A. Fundamentals
19. Stable Isotope Theory
    Apr 7
20. Isotope fractionation in the Biosphere
    Apr 12

B. Igneous and Hydrothermal Systems
21. Stable Isotopes in Igneous Systems
    Apr 14
22. Stable Isotopes in Igneous Systems II
    Apr 19
23. Hydrothermal Systems and Ore Genesis
    Apr 21

C. Low Temperature Applications
24. Applications to Archeology and Paleontology
    Apr 26
25. Paleoclimatology
    Apr 28
26. Carbon Cycle and Climate
    May 3
27. Mass Independent Fractionation; Other Isotope Systems
    May 5

Final Exam: TBA