

Location: VH300**Time:**

Tuesday-Thursday: 14:00 – 15:20

Instructor: James Day (jmdday@ucsd.edu)**Grading (Letter grade):**

40% Homework

25% Midterm

35% Final Exam

Tentative class schedule:

9 Jan	Nucleosynthesis and radioactive decay
11 Jan	Trace element geochemistry and mass spectrometry
16 Jan	Radiogenic isotope geochemistry, starting with Rb-Sr isotopes
18 Jan	Samarium-Nd isotope systematics and two-component mixtures (HW1)
23 Jan	Lead isotope systematics
25 Jan	Lu-Hf and Re-Os isotope systematics (HW1D/HW2)
30 Jan	Mantle geodynamics, isotopes and paradoxes
1 Feb	Potassium-Ar, ^{40}Ar - ^{39}Ar dating methods and extinct radionuclides
6 Feb	Mass dependent versus mass independent fractionation
8 Feb	‘Novel’ stable isotopes (Si to U)
13 Feb	Mid-term (HW2D)
15 Feb	Noble gases as tracers in the solid earth, ocean, and atmosphere
20 Feb	Cosmogenic isotopes I – Surface exposure dating, ^{10}Be and ^{36}Cl
22 Feb	Cosmogenic isotopes II – Carbon-14 as tracer and clock (HW3)
27 Feb	Principles of isotope fractionation and water isotopes
29 Feb	Oxygen isotopic composition of carbonate shells/paleothermometry (HW3D/HW4)
5 Mar	Carbon isotopes; photosynthetic fractionation; major reservoirs
7 Mar	Carbon isotopes; applications
12 Mar	Nitrogen isotopes
14 Mar	Sulfur isotopes (HW4D)
21 Mar	Final 15:00 – 18:00 (Location TBA)

*** Recommended Reading –will be uploaded as part of the class on Canvas. Text from these books will not be uploaded, but they are useful references.**

Faure, Gunter. Principles of isotope geology, Wiley, c1986. QE501.4.N9 F38 2005

Allègre, Claude J., Isotope geology, Cambridge University Press, 2008. QE501.4.N9 A45 2008

Dickin, Alan P., Radiogenic isotope geology, Cambridge University Press, 2005
QE501.4.N9 D53 2005H.-G. Attendorf and R.N.C. Bowen, Radioactive and Stable Isotope Geology, Chapman & Hall
QE501.4.N9 A895 1997

Robert Bowen, Isotopes in the earth sciences. QE501.4.N9 B69 1988

Zach Sharp, Principles of Stable Isotope Geochemistry, 2nd Edition.Available as free download at http://digitalrepository.unm.edu/unm_oer/1/