Whole Earth Geochemistry – SIO251/155 (4 units)

An overview of the geochemistry of the solid Earth aimed at both SIO graduate students (but particularly those in the Earth Section - GS, GP and MC&G curricular groups) as well as UCSD/SIO M.S./B.S students who have taken SIO-102 (Introduction to Geochemistry).

Recommended Texts

- An Introduction to our Dynamic Planet (editor: N. Rogers) Cambridge University Press. The text covers many basic concepts presented in class. It will be supplemented by a more advanced text:

Additional Reading Texts

The following textbooks also cover segments of class material. They are on reserve at the SIO Library:


Grading

Evaluation will be by final and mid-term exams, class presentations (1 per student) and homeworks (4 problem sets – every 2 weeks). Marks will be divided as follows: Final exam (45%); mid-term exam (15%); Class Presentation (10%) and Homeworks (30%).

Lectures are 50 minutes (Monday and Wednesday) and a student presentation/discussion session will be held on Friday. Grading by letter grade, except by consent of instructor.

Location & Class material

All classes will be held at SIO (Vaughan Hall) room 100 at 1pm (MWF).

All lecture presentations (Powerpoints) and homework assignments/presentation materials are available by Dropbox.
Class Syllabus

Week 1: Monday 30 March
   Monday: Lecture 1 - The Terrestrial Planets I
   Wednesday: Lecture 2 - The Terrestrial Planets II (Earth – a unique planet)
   Friday: Paper presentation & First Problem Set

Week 2: Monday 6 April
   Monday: Lecture 3 - Nucleosynthesis
   Wednesday: Lecture 4 - Meteorites
   Friday: Paper Presentation I

Week 3: Monday 13 April
   Monday: Lecture 5: Planetary Accretion
   Wednesday: Lecture 6: Earth Differentiation
   Friday: Paper Presentation II; Second Problem Set

Week 4: Monday 20 April
   Monday: Lecture 7 - The Moon
   Wednesday: Lecture 8 - The early Earth
   Friday: Paper Presentation III & Homework solutions

Week 5: Monday 27 April
   Monday: Mid-term Exam
   Wednesday: Lecture 9 - Radioactivity & Age of the Earth
   Friday: Paper Presentation IV; Third Problem Set

Week 6: Monday 4 May
   Monday: Lecture 10 - The Earth’s Mantle
   Wednesday: Lecture 11 – Basaltic Magmatism
   Friday: Paper Presentation V

Week 7: Monday 11 May
   Monday: Lecture 12 – Mantle Plumes and the Lower Mantle
   Wednesday: Lecture 13 – Composition of the Continental Crust
   Friday: Paper Presentation VI; Fourth Problem Set

Week 8: Monday 18 May
   Monday: Lecture 14 – Island Arc Volcanism I
   Wednesday: Lecture 15 – Island Arc Volcanism II
   Friday: Paper Presentation VII

Week 9: Monday 25 May
   Monday: University Holiday
Wednesday: Lecture 16 – The Water Cycle on Earth
Friday: Paper Presentation VIII & Homework Solutions

Week 10: Monday 1 June
Monday: Lecture 17 – Volcanic Degassing
Wednesday: Guest Lecture
Friday: Review Session

Exam Week: Monday 8 June

TBA: Final (11:30-2:30pm)