

**Syllabus F2015**  
**EART 204 – Earth and Planetary Sciences Foundations**  
 MW 8:30-10:30 am EMS D236  
 Faculty Coordinator: Susan Schwartz

A comprehensive overview of key concepts, dominant paradigms, and research frontiers in Earth and Planetary Sciences is provided in plenary and research talks by multiple faculty. Provides a required foundation course for all incoming students pursuing graduate degrees in Earth and Planetary Sciences. Weekly homework and a final exam required. MW, 4-credits, Required for Incoming EPS thesis Graduate Students.

<b>Date</b>	<b>Topic</b>	<b>Reading</b>	<b>HW</b>
9/28 M	Solar System Formation/Dynamics/Accretion (Garrick-Bethell) Introduction to Graduate Studies/Yosemite Field Trip	1	
9/30 W	Moon/Early Differentiation/Accretional Energy/Tides (Nimmo) Research Lecture-Nimmo	2	1
10/5 M	Heat Transport/Fluid dynamics/Thermal Evolution (Brodsky) Research Lecture - Brodsky	3	
10/7 W	Large-Scale Earth Structure (Lay) Research Lecture- Garrick-Bethell	4	2
10/12 M	Ocean/Atmosphere/Radiative Transport (Chuang) Research Lecture-Chuang	5	
10/14 W	Planetary Atmospheric Dynamics/Chemistry (Zhang) Research Lecture- Zhang	6	3
10/19 M	Plate Tectonics/Lithospheric Dynamics (Silver) Research Lecture- Silver	7	
10/21 W	Minerals and Rocks (Knittle) Research Lecture- Knittle	8	4
10/26 M	Melting/Petrology/Differentiation (Williams) Research Lecture- Williams	9	
10/28 W	Measuring Geologic Time and Crustal Evolution (Blackburn) Research Lecture- Blackburn	10	5
11/2 M	California Geology (Hourigan) Research Lecture - Hourigan	11	
11/4 W	Climate-atmos-carbon cycle of the Cenozoic (Zachos) Research Lecture- Zachos	12	6
11/9 M	Origin/Metab/History of Life/Marine Inverts (Clapham) Research Lecture-Clapham	13	
11/11 W	HOLIDAY- VETERANS DAY		
11/16 M	Evolution/Terrestrial Life/Mass Extinctions (H. Schwartz) Research Lecture- Koch	14	7
11/18 W	Groundwater (Fisher) Research Lecture-Fisher	15	
11/23 M	Geomorphology/Coastal Processes (Finnegan) Research Lecture-Finnegan	16	8

11/25	W	THANKSGIVING BREAK- NO CLASS		
11/30	M	Biogeochemistry (Paytan) Research Lecture- Paytan	17	9
12/2	W	Glaciology / Cryosphere (Tulaczyk) Research Lecture- Tulaczyk TAKE HOME EXAM	18	

Readings change annually and are uploaded to the Class eCommons Page. Some example readings are provided below:

1. Zahnle, K., N. Arndt, C. Cockell, A. Halliday, E. Nisbet, F. Selsis, N. H. Sleep, (2007), Emergence of a Habitable Planet, *Space Sci Rev* (2007) 129: 35–78, DOI 10.1007/s11214-007-9225-z
2. Nemchin, AA, Matthew S. A. Horstwood, and Martin J. Whitehouse, High spatial-resolution geochronology, *Elements*, 1811-5209/13/0009-0031 \$2.50 DOI: 10.2113/gselements.9.1.31
3. Marshall, C., Explaining the Cambrian Explosion of Animals, *Annul. Rev. of Earth and Planet. Sci.*, 2006, 34:355-384.
4. Whipple, K., (2009), The influence of climate on the tectonic evolution of mountain belts, *Nature Geoscience*, doi: 10.1038/ngeo413.
5. Unsworth, MH, and G. Wolfe, (1995), Current Progress in the Study of Global Biogeochemical Cycles, *Climate Change Research: Evaluation and Policy Implications*, S. Zwerver, R.S.A.R. van Rompaey, M.T.J. Kok and M.M. Berk, (Eds.)
6. Walther, JV, (2005), *Essentials of Geochemistry*, Ch. 8: Chemistry of Igneous Rocks
7. Ingebristen, SE, WE Sanford, and CE Neuzil, *Groundwater in Geologic Processes*, Ch. 1: Groundwater Flow.