

Schedule for Global geochemical Cycles

GG4209

Web platform: web platform 'Athena'
Literature: Global Geochemical Cycle - an analysis of global change. Schelinger & Bernhardt. 3rd edition.
BOKUS: <https://www.bokus.com/bok/9780123858740/biogeochemistry/>
Examination&grading: Available online via SU Library <https://libris.kb.se/bib/14010873>
Final Exam: A-F

teachers Rienk Smittenberg (RS)
Weil-Li Hong (WH)

Lecture
Exercises, g Mandatory

Goal: how much can humanity perturb the global cycle																					
Lecture (zoom) / recording																					
Lecture (in class) (recording)																					
Exercise (in class)																					
Presence																					
Rienk																					
Wei-Li																					
Grey WH BLUE: RS																					
Date	reading/content			9	09:15	09:30	09:45	10		11		12		13	14	15	16	Learning goals			
01-Nov Mon	CH1/2	SU	SU	L: Introduction to the course, geochemical principles, the concept of cycles (WL&Y11)										rest of day: reading ch 1, home task (very basic calculation of flux depending on pool & rate)				Basic understanding of the Earth as chemical system governed by life; re-introduction to basic chemical fundamental (thermodynamics, stoichiometry, redox).			
02-Nov Tue	CH3	SU	SU	E: Discussion of home task, cycling exercise										reading ch 3 (atmosphere, selection follows)					Understanding the concept of cycles in a mathematical sense: definition of pools, fluxes and rates; getting used to excel		
03-Nov Wed	CH3	SU	SU	L: atmosphere (short task)										E: exercises calculation of energy fluxes to earth? Turnover time of various gases in the a (RS&W U27						Knowledge of the composition of, and important chemical processes in the atmosphere, residence time of gases, energy fluxes	
04-Nov Thu	CH4	SU	SU	L: lithosphere										reading CH4 (lithosphere), home task				Knowledge and understanding of chemical composition of the solid earth, weathering, soil formation 101			
05-Nov Fri	CH4	SU (am)	SU	E: Discussion of home task, exercises (weathering rates, some chemical proce WL&RS U27										assignment: 2 page summary of the week (hand in pass/fail) (goal: reflect of learned material of the week)							
06-Nov sat		away (CH)	SU																		
07-Nov sun		away (CH)	SU																		
08-Nov Mon	Ch 4	away (CH)	SU	L: The biosphere on land										reading: Ch 5 (Terr C cycle, photosynesi, NEP etc), home t (Ch 2)				Knowledge and understanding of the basics of the organic Carbon cycle			
09-Nov Tue	CH8/9	away (CH)	SU	E: Discussion of home task, exercises (C cycle)										reading Ch 5, 6							
10-Nov Wed	CH8/9	away (CH)	SU	L: The biogeochemical cycle on land										reading Ch 6 (biogeochem cycle on land), home task							
11-Nov Thu	CH8/9	away (CH)	SU	E: Discussion of home task, exercises (C cycle)										reading Ch 7 (wetlands), home task				Understanding the role of nutrients, nutrient cycling			
12-Nov fri	CH8/9	away (CH)	SU	L: wetlands (redox)										reading, home task (write summary?)							
13-Nov sat		away (CH)	SU																		
14-Nov sun		away (CH)	SU																		
15-Nov mon	CH2/5/6/7	away (CH)	SU	E: Discussion of home task (red L: water cycle (WL)										reading: Ch 10 (water cycle), home task				Insight in the hydrological cycle			
16-Nov tue	CH2/5/6/7	away (CH)	SU	E: water cycling exercise										reading Ch 8 (inland waters) (selection follows)							
17-Nov wed	CH2/5/6/7	away (CH)	SU	L: Inland waters , nutrient cycles (shorter term cycles)										reading CH 9, (selection follows)							
18-Nov thu	CH2/5/6/7	away (CH)	SU	L: oceans, elemental cycles (longer term cycles)										E: water cycling exercise, transport (concentration / flux)				Understanding the role of water as transporting agent (nutrients), solubility, alkalinity, other elements (Si, N, P,S)			
19-Nov fri	CH10	away (CH)	SU	E: water cycling exercise, transport (concentration / flux) ctnd.										assignment: 4 page summary of the last 2 weeks (hand in p: (goal: reflect of learned material)							
20-Nov sat		away (CH)	SU																		
21-Nov sun		away (CH)	SU																		
22-Nov mon	CH10	(SU)	SU	L: global C cycle on human and geological timescales, link to oxygen										reading Ch 11, home task				Understanding the relative impact of humanity on geochemical processes on earth			
23-Nov tue	CH11	(SU)	SU	E: carbon cycle at different scales, fossil fuels , GHGs, ocean acidification (WL)&U27										Reading							
24-Nov wed	CH12/13	(SU)	SU	L: human impact on geochemical cycles: N, P, Si										reading , home task							
25-Nov thu	CH12/13	(SU)	SU	E: human perturbation on the nutrient cycles (WL)&U27																	
26-Nov fri	Ch 14	(SU)	SU	study, exam prep Recap of course, questions										Assignment: 2 page summary of the week (goal: reflect of learned material)							
27-Nov sat		(SU)		(study)																	
28-Nov sun		(SU)		(study)																	
29-Nov mon	Ch 14	(SU)		Away (ship; study, exam prep																	
30-Nov tue		(SU)		Away (ship; study, exam prep																	
01-Dec wed		(SU)		Final exam										1/3: testing understanding on concepts (basics) 1/3 testing of various geochemical reactions and processes (basic chemistry) 1/3 simple cycle model questions (mathematics)							