

Tillämpad miljögeokemi, Applied Environmental Geochemistry, 7.5 hp vårtermin 2024

Kursansvariga: Brüchert (VB)

Lärare: Brüchert (VB)

Week		Date	Fr.o.m.	To.m.	Content	Teaching goal (theory)	Teaching goal (applied)	Tasks	Deadlines	U-typ	Location	Teacher	Reading	
W12	Thursday	2024-03-21	09:00	10:00	Introduction, course outline					Introduction	U 28	Brüchert		
W12	Thursday	2024-03-21	10:00	12:00	Geochemistry in environmental risk and impact assessment	Understand the basics of the risk of the assessment process	Understand the scope of the subject and the course goals; Miljöbalken, environmental risk assessment, environmental impact assessment			Lecture	U 28	Brüchert	Posted material on Athena	
W12	Thursday	2024-03-21	13:00	15:00				Reading			Self study		Brüchert	Posted material on Athena
W12	Friday	2024-03-22	10:00	12:00	Discussion						Discussion	U 28	Brüchert	
W13	Monday	2024-03-25	09:00	12:00	Overview: Environmental geochemistry of surface environments, coasts, sediments, and groundwater			Know major compositional differences in surface Earth reservoirs and geochemical processes controlling the composition of terrestrial and aquatic natural systems				Lecture	U 27	Brüchert
W13	Monday	2024-03-25	13:00	17:00	Aqueous systems and water chemistry	Familiarity with equilibrium and speciation in aquatic systems	Work with equilibrium diagrams to predict stability and pre-dominance fields of environmental compounds of interest	Establish predominance and speciation plots with Medusa and Minteq		Exercises	U 27	Brüchert	Posted material on Athena	
W13	Tuesday	2024-03-26	09:00	12:00	Geochemical reaction rates	Chemical reactivity in aquatic systems	Know important equations that describe transport, dispersion, retention, and reaction in soil, groundwater, and aquatic systems; use 1D reaction transport model			Lecture	U 27	Brüchert	Posted material on Athena	
W13	Tuesday	2024-03-26	13:00	17:00	Kinetic controls, microbial and transport controls on carbon degradation and pollutant behavior	Combine physical transport and chemical reactivity to aquatic systems				Exercises	U 27	Brüchert	Posted material on Athena	
W13	Wednesday	2024-03-27	09:00	12:00	The principle reaction transport equation	Combine physical transport and chemical reactivity to aquatic systems				Lecture	U 27	Brüchert	Posted material on Athena	
W13	Wednesday	2024-03-27	13:00	17:00	The principle reaction transport equation, modelling with 1D and 2D models	The general reaction transport equation	Basics of reaction and transport model implementation	Perform exercises with 1D and 2D reaction transport model		Exercises	U 27	Brüchert	Posted material on Athena	
W13	Thursday	2024-03-28			Recapitulation of material			Recapitulation. Work with reaction transport models		Self study				
W13	Friday	2024-03-29			Easter									
W13	Saturday	2024-03-30			Easter									
W14	Sunday	2024-04-01			Easter									
W14	Monday	2024-04-01			Easter									
W14	Tuesday	2024-04-02	13:00	16:00	Mine waste, mine water chemistry, and remediation	Acid mine waste production processes and rates, distribution, retention and remediation measures	Mechanisms and scale of heavy metal and acid production; remediation procedures			Lecture	U 10	Brüchert	Posted material on Athena	
W14	Wednesday	2024-04-03	13:00	16:00	Environmental geochemistry of xenobiotic organic compounds					Lecture	Y 11	Brüchert	Posted material on Athena	
W14	Thursday	2024-04-04	13:00	16:00	Environmental biogeochemistry of eutrophication					Lecture	Y 11	Brüchert	Posted material on Athena	
W15	Friday	2024-04-05	10:00	14:00	Groundwater Stockholm	Walking Excursion Ulriksdal	Groundwater drinking water resources Stockholm			Excursion		Brüchert	Posted material on Athena	
W15	Monday	2024-04-08	09:00	15:00	Data evaluation Ulriksdal drinking water						U 10	Brüchert	Posted material on Athena	
W15	Tuesday	2024-04-09	13:00	16:00	Environmental geochemistry of naturally occurring radionuclides and of nuclear fuel products	Chemical state and mobility	Health risk of radioactivity, radionuclide distribution, radiation levels, and mobility			Lecture	Y 11	Brüchert	Posted material on Athena	
W15	Wednesday	2024-04-10			Reading and case studies					Self study	Y 11	Brüchert	Posted material on Athena	
W15	Thursday	2024-04-11	12:00	17:00	Excursion Görnvalverket	Drinking water quality	Techniques of drinking water production			Excursion		Brüchert		
W15	Friday	2024-04-12	10:00	12:00	Special topics in environmental geochemistry	Independent literature work	Independent literature research, independent written paper, and oral presentation	Reading and recapitulation; Work on independent research topic	Choose subject for independent research topic	Seminar	Y 11	Brüchert		
W16	Monday	2024-04-15			Special topics in environmental geochemistry			Independent work						
W16	Tuesday	2024-04-16			Special topics in environmental geochemistry			Independent work						
W16	Wednesday	2024-04-17			Special topics in environmental geochemistry			Independent work						
W16	Thursday	2024-04-18	13:00	16:00	Special topics in environmental geochemistry			Independent work	Present outline for research paper	Seminar	Y 11	Brüchert		
W16	Friday	2024-04-19			Special topics in environmental geochemistry			Independent work						
W16	Monday	2024-04-22	09:00	12:00	Special topics in environmental geochemistry			Seminar	Presentation of independent project and discussion	Seminar	Y 11	Brüchert		
W16	Tuesday	2024-04-23						Recapitulation						
W16	Wednesday	2024-04-24						Recapitulation	Submission of paper for independent project					
W16	Thursday	2024-04-25						Recapitulation						
W16	Friday	2024-04-26						Recapitulation						
W16	Monday	2024-04-29	09:00	12:00	Final examination			Exam			Y 11	Brüchert		
W16	Tuesday	2024-04-30							Final deadline submission of paper for independent project					

Assessment:

First assignment

Second assignment

Written paper

Oral presentation

Active participation during discussion

Final exam

15%	A	>90
15%	B	>80
30%	C	>70
15%	D	>60
5%	E	>50
20%	F	<50
100		