

GEOL 5806 - Modular Graduate Course in Exploration Geochemistry

Mineral Exploration Research Centre, Harquail School of Earth Sciences, and Goodman School of Mines

All Lectures and Labs will be delivered on-campus in the Executive Learning Centre and live via Zoom

DAY	START	END	TOPIC	SPEAKER
0 Thu 08 Dec 2022 Optional ioGAS Tutorial	0900	1030	Introduction to ioGAS	Michael Leshar (HES/MERC)
	1030	1100	Break	
	1100	1200	Working with ioGAS	Michael Leshar (HES/MERC)
	1200	1300	Break	
	1300	1430	Practical Exercise: Analysis of a Silicate Litho geochemistry Database	Michael Leshar (HES/MERC)
	1430	1500	Break	
1 Fri 09 Dec 2022	1500	1700	Practical Exercise: Analysis of a Sulfide Geochemistry Database	Michael Leshar (HES/MERC)
	0900	1030	Analytical methods	Marcus Burnham (Geo Labs)
	1030	1100	Break	
	1100	1230	Analytical methods	Marcus Burnham (Geo Labs)
	1230	1330	Break	
	1330	1430	QCQA (Standards, Reference Materials, Precision/Accuracy, Failure Monitoring)	Jennifer Hargreaves (Geo Labs)
2 Sat 10 Dec 2022	1430	1500	Break	
	1500	1700	Lab 1 - QAQC	Burnham and Hargreaves (Geo Labs)
	0900	0930	Data preparation	Michael Leshar (HES/MERC)
	0930	1030	Preliminary considerations in data analysis, litho geochem data, censored data, data transformations	Cliff Stanley (Acadia)
	1030	1100	Break	
	1100	1230	Sampling & geostatistics, sampling theory, geostatistical overview	Cliff Stanley (Acadia)
3 Sun 11 Dec 2022	1230	1330	Break	
	1330	1500	Major/trace element geochem, basic litho geochem, conserved element diagrams, discriminating lithologies, classification, strategy for analysis	Cliff Stanley (Acadia)
	1500	1530	Break	
	1530	1700	Lab 2 - Litho geochemistry	Cliff Stanley (Acadia)
	0900	1030	Molar element ratio analysis theory 1, closure, theorem of geochemical material transfer, diagrams and projective geometry	Cliff Stanley (Acadia)
	1030	1100	Break	
4 Mon 12 Dec 2022	1100	1230	Molar element ratio analysis theory 2, calculations, testing cogenetic hypotheses, PER & GER diagrams and examples	Cliff Stanley (Acadia)
	1230	1330	Break	
	1330	1500	Molar element ratio analysis theory 3, hydrothermal alteration, custom norms	Cliff Stanley (Acadia)
	1500	1530	Break	
	1530	1700	Lab 3 - Pearce element ratio analysis and general element ratio analysis	Cliff Stanley (Acadia)
	5 Tue 13 Dec 2022	0900	1030	Alteration mass balance
1030		1100	Break	
1100		1230	Lab 4 - Alteration mass balance	Michael Leshar (HES/MERC)
1230		1330	Break	
1330		1500	Stable isotopes	Matt Leybourne (QU)
1500		1530	Break	
6 Wed 14 Dec 2022	1530	1700	Lab 5 - Stable isotopes	Michael Leshar (HES/MERC)
	0900	1030	Radiogenic isotopes	Matt Leybourne (QU)
	1030	1100	Break	
	1100	1230	Lab 6 - Radiogenic isotopes	Michael Leshar (HES/MERC)
	1230	1330	Break	
	1330	1500	Till geochemistry & indicator minerals	TBA
7 Thu 15 Dec 2022	1500	1530	Break	
	1530	1700	Transport through cover	Matt Leybourne (Queen's)
	0900	1030	Stream sediments and lake sediments	Matt Leybourne (Queen's)
	1030	1100	Break	
	1100	1230	Aqueous geochemistry	James Kidder (GSC)
	1230	1330	Break	
8 Fri 16 Dec 2022	1330	1500	Aqueous isotope geochemistry	James Kidder (GSC)
	1500	1530	Break	
	1530	1700	Lab 7 - Surficial geochemistry	Matt Leybourne and Beth McClenaghan
	0900	1030	Geochemical exploration for VMS deposits	Steve Piercey (Memorial)
	1030	1100	Break	
	1100	1230	Hydrothermal sediment geochemistry/isotopes	Steve Piercey (Memorial)
9 Sat 17 Dec 2022	1230	1330	Break	
	1330	1500	TBA	TBA
	1500	1530	Break	
	1530	1700	Lab 8 - TBA	TBA
	0900	1030	Case study: Exploration geochemistry of unconformity U deposits	Steve Beyer (Queen's)
	1030	1100	Break	
10 Sun 18 Dec 2022	1100	1230	Lab 9 - Uranium	Steve Beyer (Queen's)
	1230	1330	Break	
	1330	1530	Case study: Exploration geochemistry of porphyry Cu deposits	Robert Lee (MDRU/UBC)
	1530	1600	Break	
	1600	1700	Lab 10 - Porphyry Cu deposits	Robert Lee (MDRU/UBC)
	9 Sat 17 Dec 2022	0900	1030	Case study: Exploration geochemistry of orogenic Au deposits
1030		1100	Break	
1100		1230	Lab 11 - Orogenic Au deposits	Stephane Perrouty (HES/MERC)
1230		1330	Break	
1330		1500	Case study: Machine learning	John McGaughey (MIRA)
1500		1530	Break	
10 Sun 18 Dec 2022	1530	1700	Machine learning demo	John McGaughey (MIRA)
	0900	1030	Diamond exploration geochemistry	Dave Crabtree (Geo Labs)
	1030	1100	Break	
	1100	1230	Mineral exploration case studies	Behnam Sadeghi (Carnegie Inst Sci)