

Week	Date	Theme	Lectures			Prac
1	6-10 feb	Classification(s) of igneous rocks	W1L1	1	Introduction to igneous petrology. Earth structure. Magma generation in a plate tectonics context.	IUGS classification
			W1L2	2	IUGS classification. QAPF modal classification, T.A.S diagram.	
			W1L3	3	Other classifications	
2	13-17 feb	Analytical techniques; Major and trace elements and their use in petrology	W2L1	4	Geochemistry, analytical techniques. Interpreting geochemical data.	CIPW norms
			W2L2	5	Major elements. Magmatic series.	
			W2L3	6	Trace elements. Spidergrams. Partition coefficients.	
3	20-24 feb	Isotopes and their use in petrology	W3L1	7	Isotopes(1): dating using isotopes. The U-Pb system. Concordia and discordia	Using trace elements
			W3L2	8	Isotopes(2): Using isotopes as tracers. Sr initial ratios. Isotopic heterogeneity of the Earth.	
			W3L3	9	Overview of magmatic processes: from melting to emplacement.	
4	27 feb - 3 mar	Magma genesis and evolution. 1. melting	W4L1	10	Melting (1): Melting of the mantle and generation of basalts. Binary and ternary phase diagrams.	
			W4L2	11	Melting (2): Melting of the crust and generation of granites. Experimental petrology. Complex systems.	
			W4L3	12	Melting (3): Melt extraction & transport. Migmatites.	
5	6 - 10 mar	Magma genesis and evolution. 2. XF, mixing, etc.	W5L1	13	Fractional crystallization(1): Phase relations and mineral formed. Gravitational settling.	Migmatites
			W5L2	14	Fractional crystallization(2): Evolution of liquids. Descent lines. The meaning of magmatic series.	
			W5L3	15	Other differentiation processes. Liquid unmixing, mixing and assimilation.	
6	13 - 17 mar	Cooling and solidification	W6L1	16	Using geochemistry to distinguish between magmatic processes. Major, trace and isotopes.	Crystallization sequence
			W6L2	17	Cooling, solidification and textures of igneous rocks. Crystallization sequences. Zoning. Syn-tectonic textures	
			W6L3	18	Sub-solidus evolution. Secondary minerals. Fluid circulation, pegmatites and hydrothermal fluids. Mineral deposits. Greisens.	
7	20 - 24 mar	Magma transport and emplacement	W7L1	19	Pluton contact and other outcrop-scale features. Enclaves. Melt pathway.	Sea Point
			W7L2	20	Magma movement and emplacement of plutons. Dykes and diapirs.	
8	27 - 31 mar	Magma emplacement 2: volcanic processes	W8L1	21	Phreatomagmatism: magma-water interactions. Submarine volcanism, surtseyan eruptions, maars and diatremes.	Lavas and pyroclastites
			W8L2	22	Volcanic processes linked to gas exsolution. Bubble nucleation and growth. Fragmentation. Plinian and katmaian eruptions, calderas.	
			W8L3	23	Gas-poor magmas. Lavas domes, block-and-ash flows, pelean eruptions. Lavas flows, hawaian and strombolian eruptions. Erosion and collapse of shield volcanoes.	
	Break					Field trip to the West Coast.
9	10-14 apr	Granites	W9L1	24	Types of granites. SIMA classification	Papers presentation: granites.
			W9L2	25	Granite genesis and evolution. Granites in a plate tectonics context.	Granites
10	17-21 apr	Ophiolites/Layered complexes (revision)	W10L1	26	Ophiolites and the oceanic crust. Mid-ocean ridges.	
			W10L2	27	Layered igneous complexes. Origin of igneous layering.	
			W10L3		Papers presentation	
11	24-28 apr	Arc related magmatism, andesites	W11L1	28	Origin of andesites. Melting of the subduction-zone mantle. Source of fluids, melting reactions in presence of water.	Ophiolites and LIC
			W11L2	29	Continental arcs. Multi-components magmatism.	
			W11L3		Papers presentation	
12	1-5 may	Archaean magmatism	W12L1	30	Komatites and TTG.	Andesites
			W12L2		Papers presentation	
13	8-12 may	Intra-plate magmatism	W13L1	31	Basaltic intraplate volcanoes. Oceanic islands, traps.	Alkali series
			W13L2	32	Continental alkali series. Potassic magmatism. Kimberlites;	
			W13L3		Papers presentation	
14	15-19 may	Free slot - revisions, etc.				Revisions