

Week	Date	Theme	Lectures		Prac		
1	5-9 feb	Introduction	W1L1	1	Introduction to igneous petrology. Magmas from formation to emplacement	IUGS classification (thin sections)	
			W1L2	2	Context: structure of the Earth		
			W1L3	3	Context: origin & differentiation of the Earth		
2	12-16 feb	What's a rock is made of? Major and trace elements. Magmatic series	W2L1	4	Geochemistry, analytical techniques. Interpreting geochemical data.	CIPW (Calculations, based work)	norms excel
			W2L2	5	Major elements. Magmatic series.		
			W2L3	6	Major elements (cont.): IUGS classification(s). Trace elements. Some useful representations		
3	19-23 feb	Melting	W3L1	7	Melting (1): Melting of the mantle and generation of basalts. Binary and ternary phase diagrams.	Migmatites (thin sections)	
			W3L2	8	Melting (2): Melting of the crust and generation of granites. Experimental petrology. Complex systems.		
			W3L3	9	Melting (3): Melt extraction & transport. Migmatites.		
4	26 feb - 2 mar	Magma differentiation	W4L1	10	Fractional crystallization(1): Phase relations and mineral formed. Gravitational settling.	Building phase diagrams? (to be precised - probably computer-based)	
			W4L2	11	Fractional crystallization(2): Evolution of liquids. Descent lines. The meaning of magmatic series.		
			W4L3	12	Other differentiation processes. Liquid unmixing, mixing and assimilation.		
5	5-9 mar	Cooling and solidification	W5L1	13	Cooling, solidification and textures of igneous rocks. Crystallization sequences. Zoning. Syntectonic textures	Crystallization sequence (Thin sections)	
			W5L2	14	Sub-solidus evolution. Secondary minerals. Fluid circulation, pegmatites and hydrothermal fluids. Mineral deposits. Greisens.		
			W5L3	15	Trace elements in igneous processes		
6	12-16 mar	How to identify magmatic processes?	W6L1	16	Using geochemistry to distinguish between magmatic processes. Major, trace and isotopes.	Sea Point (Field)	
			W6L2	17	Isotopes(1): dating using isotopes. The U-Pb system		
			W6L3	18	Isotopes(2): Using isotopes as tracers. Sr initial		
7	19-23 mar	Granite emplacement	W7L1	19	Papers presentation: granite emplacement		
			W7L2	20	Pluton contact and other outcrop-scale features. Enclaves. Melt pathway.		
			W7L2	21	Magma movement and emplacement of plutons. Dykes and diapirs.		
8	26-30 mar	Volcanoes	W8L1	22	Phreatomagmatism: magma-water interactions. Submarine volcanism, surtseyan eruptions, maars and diatremes.	Anatomy of a volcano (Maps + documents)	
			W8L2	23	Volcanic processes linked to gas exsolution. Bubble nucleation and growth. Fragmentation. Plinian and katmaiian eruptions, calderas.		
			W8L3	24	Gas-poor magmas. Lavas domes, block-and-ash flows, pelean eruptions. Laves flows, hawaian and strombolian eruptions. Erosion and collapse of shield volcanoes.		
	2-6 apr					Field trip to the West Coast. 31st March and 1st of April	
9	9-13 apr	Granites	W9L1	25	Papers presentation - granites	Granites (to be defined - probably samples, thin sections and documents)	
			W9L2	26	Granite genesis and evolution. Granites in a plate tectonics context.		
10	16-20 apr	Ophiolites	W10L1	27	Papers presentation - ophiolites	Ophiolites (Probably Excel-based)	
			W10L2	28	Ophiolites and the oceanic crust. Mid-ocean ridges.		
			W10L3	29	Papers presentation - LIC		
11	23-27 apr	Layered Igneous Complexes	W11L1	30	Layered igneous complexes. Origin of igneous layering.	LIC (probably thin sections + documents ?)	
			W11L2	31	Papers presentation - intraplate		
			W11L3	32	Basaltic intraplate volcanoes. Oceanic islands, trapps.		
12	30 apr - 4 may	Arc magmas	W12L1	32	Komatiites and TTGs	Alkali series (probably thin sections ?)	
			W12L2	33	Paper presentations - continental alkali		
13	7-11 may	Intra-plate magmatism	W13L1	34	Continental alkali series. Potassic magmatism. Kimberlites;	Andesites (To be decided)	
			W13L2	35	Papers presentation - andesites		
			W13L3	36	Origin of andesites. Melting of the subduction zone mantle. Source of fluids, melting reactions in presence of water.		