

Module code	SG-4304		
Module Title	Igneous Petrogenesis		
Degree/Diploma	Bachelor of Science (Geology)		
Type of Module	Major Option		
Modular Credits	4	Total student Workload	10 hours/week
		Contact hours	4 hours/week
Prerequisite	SG-1203 Introduction to Crystallography and Mineralogy, SG-2304 Igneous and Metamorphic Rocks		
Anti-requisite	SG-4312 Igneous and Metamorphic Petrogenesis		
Aims Students will be provided with advanced information on the petrogenetic issues for the formation of igneous rocks. They will understand the processes of the formation of Earth, as well as its evolution from its initial stages till today. They will familiarise themselves with the roles of the thermodynamics and the geochemical processes in the melting of the Earth's Mantle and Crust.			
Learning Outcomes <i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	30%	- describe the formation of our Solar System - report the thermodynamic laws in igneous systems - understand the application of thermodynamic laws on magmatism	
Middle order :	50%	- investigate and interpret the relations of textural features with magmatism - research igneous processes of large regions on Earth and other Planets - explain the evolution of Earth in certain regions and geological times - organise information from scientific papers and to analyse their data - investigate magmatic petrogenetic reactions	
Higher order:	20%	- justify the physicochemical conditions for the evolution of igneous rocks - apply thermodynamic laws on magmatic and metamorphic systems - read and comprehend relevant, professional publications	
Module Contents - Origin of elements and minerals on the Earth - Fundamentals of thermodynamics; the role of the Earth's Mantle as a heat engine - The phase lever rules in the igneous systems; unary, binary, ternary petrogenetic systems - Processes for production and evolution of a magma and models of magmatic evolution - Geotectonic, magmatic environments			
Assessment	Formative assessment	Practical tests, assignments and feedback	
	Summative assessment	Examination: 50% Coursework: 50% - 1 mid-term test (25%) - 1 Practical test (25%)	