

Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim, Goa-India

Name of Faculty: Shritesh Mhapsekar

Subject: Geology

Paper code: GEO-302; Igneous Petrology

Program/Course: TY B.Sc.

Division:

Academic year: 2026- 2027

Semester: V

Total Lectures: 45

Course Objectives:

1. Describe the processes involved in the formation of igneous rocks and their diversity. CL2
2. Classify igneous rocks. CL2
3. Discuss the crystallization of melts by studying textures and structure of igneous rocks. CL2

Course Learning Outcome:

1. Explain formation and diversity of igneous rocks. CL2
2. Interpret the cooling history of igneous rocks using textures and structures. CL3
3. Illustrate crystallization trends in magmatic systems. CL3
4. Identify common igneous rocks both in hand specimen and thin section. CL3

Month	Lectures From:	Lectures To:	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	19/06/2026	21/6/2026	3	Introduction			

				Introduction to the paper		1. Barker, D. S. (1983). Igneous Rocks. Prentice Hall. 2. Best, M. G. (2013). Igneous and metamorphic petrology. John Wiley & Sons. 3. Bose Mihir: Igneous Petrology, World Press, 1997. 4. Hall, A. (1987). Igneous Petrology. Longman Scientific and Technical. 5. Hatch, F. H., & Wells, A. K. (1926). The Petrology of the Igneous Rocks.
				Discussion about Syllabus		
				Distribution of igneous activity in relation to plate margins and plate interiors		
	22/6/2026	28/6/2026				
JULY	29/6/2026	5/7/2026		Distribution of		

				igneous activity in relation to plate margins and plate interiors				
				Factors responsible for generation and ascent of magma				
				Factors responsible for generation and ascent of magma				
	6/7/2026	12/7/2026		Magmas: characteristics with respect to temperature, density, viscosity				
				chemical composition and role of volatiles.				
				Magmatic evolution				
	13/7/2026	19/7/2026		differentiation: liquid immiscibility, liquid fractionation and movement of volatiles;				1. Barker, D. S. (1983). Igneous Rocks. Prentice Hall. 2. Best, M. G. (2013). Igneous and metamorphic petrology. John Wiley & Sons. 3. Bose Mihir: Igneous Petrology, World Press, 1997. 4. Hall, A. (1987). Igneous
				differentiation: liquid immiscibility, liquid fractionation and movement of volatiles;				
				fractional crystallization: gravity settling, filter pressing and flow differentiation; magma mixing and assimilation				
	20/7/2026	26/7/2026		fractional				

1. Barker, D. S. (1983). Igneous Rocks. Prentice Hall.
2. Best, M. G. (2013). Igneous and metamorphic petrology. John Wiley & Sons.
3. Bose Mihir: Igneous Petrology, World Press, 1997.
4. Hall, A. (1987). Igneous

August			crystallization: gravity settling, filter pressing and flow differentiation; magma mixing and assimilation			Petrology. Longman Scientific and Technical. 5. Hatch, F. H., & Wells, A. K. (1926). The Petrology of the Igneous Rocks.
			Classification based on mineral composition: Hatch, Wells & Wells			
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	27/7/2026	2/8/2026	IUGS classification			
			IUGS classification			
			IUGS classification			
	3/8/2026	9/8/2026	Intrusive (Plutonic, hypabyssal)			
			Intrusive (Plutonic, hypabyssal)			
			Intrusive (Plutonic, hypabyssal)			
	10/8/2026	16/8/2026	Concordant and discordant			
			Concordant and discordant			
			Batholiths, stocks, bosses			

	17/8/2026	23/8/2026		, lopoliths, laccoliths, phacoliths		
				dykes and sills, volcanic neck		
				central and fissure type eruptions		
September	24/8/2026	30/8/2026		central and fissure type eruptions		
				Ropy lava, blocky lava, pillow lava, vesicular		
				amygdaloidal, columnar, exfoliation joints, lava tubes		
	31/8/2026	6/9/2026		Crystallinity, granularity, shape of the grains		
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				mutual relationship of grains: equigranular and inequigranular		
	7/9/2026	13/9/2026		mutual relationship of grains: equigranular and inequigranular		
				mutual relationship of grains: equigranular and inequigranular		

				Crystallization trend of Di-Ab-An system				
	14/9/2026	20/9/2026		Ganesh break				
				Ganesh break				
				Ganesh break				
	21/9/2026	27/9/2026		Ne-Ka-Si system				
				granites (I-type, S-type,)				
				rhyolites and pegmatites				
	October	28/9/2026	4/10/2026			syenites and trachytes (oversaturated, saturated, undersaturated)		
						gabbroic (gabbros, norites, dolerites and basalts		
						ultramafic (dunites, pyroxenites, peridotites		
5/10/2026		11/10/2026		lamprophyres, anorthosites, carbonatites, kimberlites				
				layered igneous intrusions (types of layering: modal, phase, rhythmic and cryptic				
				layered igneous				

				intrusions (types of layering: modal, phase, rhythmic and cryptic)		
	12/10/2026	14/10/2026		Revision		
				Revision		
				Revision		

**Assessment
Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Project	-
Semester End Exam	60