

## Semester Lecture Plan

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

**Name of Faculty:** Ms. Magnolia Aurea Miranda

**Subject:** Geology

**Paper code:** GEC-109

**Program/Course:** TY B.Sc.

**Division:**

**Academic year:** 2024 - 2025

**Semester:** VI

**Total Lectures:** 60

### Course Objectives:

1. This course will mainly focus on the occurrence, appearance, formation and distribution of metamorphic rocks.
2. It will provide an insight into the mineralogy, texture and structure of metamorphic rocks
3. It will create lineage between different metamorphic, igneous and sedimentary rocks
4. Also highlight the field characters, facies and ultimately the tectonic settings in which the rocks formed.

### Course Learning Outcome:

1. Distinguish metamorphic rocks from other types of rocks
2. Categorize and relate the metamorphic mineral assemblages according to their modes of formation
3. Describe and discern the textures and structures exhibited by metamorphic rocks
4. Interpret tectonic settings based on the type of metamorphic rock

Month	Lectures From: To:		No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
December	9/12/24	14/12/24	4	Definition of metamorphism. Factors responsible for metamorphism	Activity with clay	Projector/ Smart board	Raymond, Loren: Igneous and Metamorphic

	16/12/24	21/12/24	3	Factors responsible for metamorphism		Projector/ Smart board	Petrology, John Wiley Sons
<b>January</b>	2/1/25	4/1/25	2	Types of metamorphism: Local – contact metamorphism and cataclastic metamorphism. Regional- burial metamorphism		Projector/ Smart board	Winter John: Igneous and metamorphic petrology
	6/1/25	11/1/25	4	Regional- dynamothermal metamorphism, other types of metamorphism: ocean floor metamorphism, hydrothermal metamorphism		Projector/ Smart board	
	13/01/25	18/1/25	4	other types of metamorphism: dislocation metamorphism, impact metamorphism and their relationship with the major types of metamorphism.		Projector/ Smart board	
	20/1/25	25/1/25	4	Contact metamorphism its characteristics and products (e.g. hornfels, skarns). Regional		Projector/ Smart board	Raymond, Loren: Igneous and Metamorphic Petrology, John Wiley Sons

				metamorphism its characteristics and products (e.g. slates, schists, gneisses and granulites). Fabric of metamorphic rocks. Fabric types: relict			Winter John: Igneous and metamorphic petrology  Blatt and Tracy: Petrology
	27/1/25	31/1/25	4	Isotropic fabric, anisotropic fabric, Lineation,		Projector/ Smart board	
	3/2/25	8/2/25	4	Origin of fabric of metamorphic rocks. Porphyroblasts, Idioblastic series			
	10/2/25	15/2/25	4	Classification of metamorphic rocks based on mineralogy and fabric. Protoliths (metapelites, metabasites, metagreywackes)		Projector/ Smart board	
	17/2/25	22/2/25	4	Field characters of metamorphic rocks: variations in mineralogy and fabric. Concept of depth zones and index minerals, their significance in mapping and understanding tectonic history. ACF and AFM		Projector/ Smart board	
<b>February</b>							

				(AKFM) diagrams their advantages and limitations.		
	24/2/25	28/2/25	4	Facies concept after Goldschmidt and Eskola. Facies of contact metamorphism and characteristic mineral assemblages in shales		Projector/ Smart board
<b>March</b>	3/3/25	8/3/25	4	Facies of contact metamorphism and characteristic mineral assemblages in shales, limestone	Assignment	Projector/ Smart board
	4/3/25	9/3/25	4	Facies of regional metamorphism and their characteristics: zonation in mineralogy, Barrovian- (relatively higher P)	Assignment	Projector/ Smart board/ Smart board
	10/3/25	15/03/25	4	Facies of regional metamorphism and their characteristics: zonation in mineralogy, Buchan- (relatively lower P) series, and their significance	Assignment	Projector/ Smart board
	17/03/25	22/03/25	4	Products of regional metamorphism- rocks		Projector/ Smart board

				and characteristic minerals in different facies in different kinds of rocks such as shales, limestones and basalts.			
	24/03/25	29/3/25	4	Metamorphism in relation to the plate tectonic environments		Projector/ Smart board	
	31/03/25		1	Revision		Projector/ Smart board	
<b>April</b>	1/04/25	5/04/25	3	Revision		Projector/ Smart board	
	7/04/25	11/4/25	4	Revision		Projector/ Smart board	

#### Assessment Rubrics

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	50
Project	-
Semester End Exam	80

