

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	GLC205	Introduction to Petrology	3	0	0	9

Course Objective

Through this introductory course, the students will get to know the different rocks types and fundamentals of petrology.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Learn about different rock types that make up the Earth
- Understand the differences between igneous, metamorphic and sedimentary rocks
- Learn about textures of different rock types

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	<u>Igneous Petrology</u> Earth's interior, Heat source in the Earth, Heat transfer, Geothermal gradient; Properties of silicate melts; nucleation and growth of crystals; equilibrium and fractional crystallization	8	This will help the student to understand basic earth structure, sources of heat and generation of magma and its evolution.
2	Bowen's reaction series, magmatic differentiation processes; Variation diagrams and trace element modeling; Texture, structure and classification of igneous rocks	8	The topic covers the principles of Bowen's reaction series leading to the development of different igneous rock types, textural characteristics of different igneous rocks and their classification schemes.
3	<u>Metamorphic Petrology</u> Definition, Limits of metamorphism; Agents of metamorphism and changes; Types of metamorphism; Types of protoliths; Metamorphic facies classification and baric types	8	Deals with the different aspects of metamorphism, facies variation and classification metamorphic rocks at different geological conditions.
4	Description of common metamorphic rock types (their mineral assemblages and texture)	8	Covers the descriptive metamorphic petrology and their mineralogical variations.
5	<u>Sedimentary Petrology</u> Sedimentation processes; Classification and description of some common sedimentary rocks (Conglomerate, Sandstone, Shale, Limestone); Sedimentary texture	10	It will give fundamental idea about the process of sedimentation, sources and depositional mechanism of sedimentary rocks and their classification schemes.

Text Books:

1. Best, M.G., 2003. Igneous and Metamorphic Petrology, Blackwell Publishing; 729 p.
2. Wilson, M., 2007. Igneous Petrogenesis – A Global Tectonic Approach, Springer, Dordrecht; 466 p.

Reference Books:

1. Winter, J.D., 2014. Principles of Igneous and Metamorphic Petrology, PHI Learning Private Limited, Delhi; 702 p.
2. Philpotts, A.R., Ague, J.J., 2009. Principles of Igneous and Metamorphic Petrology, Cambridge University Press, New York; 684 p.
3. Sam Boggs, Jr., 2009. Petrology of Sedimentary Petrology, Cambridge University Press; 600 p.