



MANGALORE UNIVERSITY
DEPARTMENT OF MARINE GEOLOGY

MGH 402: PETROLOGY

CO1: Identify various minerals formed in igneous rocks and interpret geologic history of igneous rocks based on mineral assemblages and texture.

CO2: To make students confident of their ability to “read” rocks.

CO3: Assign a name to an igneous, sedimentary and metamorphic rocks based on mineralogical and textural characteristics.

CO4: Quarring, mining and science disciplines, mines and geology departments and, academic and research institutions

Igneous Petrology

Unit 1	Magma and its properties: magma, its generation in the crust and mantle, physical and chemical properties. Bowen’s reaction series. Magmatic Evolution: partial melting, magmatic differentiation fractional crystallization, liquid immiscibility, magma mixing and assimilation.	8 hrs
Unit 2	Forms and structures of igneous rocks. Classification of igneous rocks - IUGS and other standard classifications. Textures of igneous rocks.	6 hrs
Unit 3	Distribution and description of important igneous rocks: Granite, basalt, syenite, peridotite, carbonatite, dolerite, lamprophyre, kimberlite and their associated mineral deposits with special reference to India.	6 hrs

Sedimentary Petrology

Unit 4	Sources and formation of sediments. Textures and primary structures of sedimentary rocks.	6 hrs
Unit 5	Diagenesis. Classification of sediments and sedimentary rocks.	6 hrs
Unit 6	Distribution and description of important sedimentary rocks: Rudites – Breccia and conglomerate; Arenites - sandstones, greywacke; Argillites – shale, Carbonates - limestone and dolomite.	8 hrs

Metamorphic Petrology

Unit 7	Metamorphism: Introduction, definition and types, ocean-floor metamorphism, diagenesis vs. metamorphism. Factors of metamorphism: temperature, pressure and fluids.	6 hrs
Unit 8	Textures and structures of metamorphic rocks: Lineation and Foliation, Grades of metamorphism. Gneisses, granulites, quartzites, schists, slates and marbles.	6 hrs

List of References:

1. Sedimentary Petrology F. J. Pettijohn (2004).
2. Petrology of sedimentary rocks – Greensmith (1989).
3. Depositional Sedimentary environments, Springer–H.E. Reineck and I.B. Singh
4. Principles of Petrology – G. W. Tyrell, Asia Pub. House, New Delhi (1980).
5. Petrology – Ehlers and Blatt, CBS Publ (2006).
6. Igneous and Metamorphic Petrology – Best Myron G., CBS Publications (1986).
7. Students Petrology – Allen and Nockolds (1978).
8. A Practical Approach to Sedimentology - CBS Pub. – R.C. Lindholm (1987).
9. Sedimentary Rocks, CBS Pub. – F. J. Pettijohn (1984).
10. Petrology- Igneous, Sedimentary and Metamorphic (3rd Edition): Harvey Blatt, Robert J. Tracy, Brent E. Owens - Allied Publishers.
11. Igneous rocks and Processes: Practical Guide by robin Gill - Willey Blackwell.
12. Petrology of Sedimentary Rocks: Boggs Sam- CUP.