

## Semester IV

### Paper 8: Metamorphic petrology

Definition and classification of metamorphic rocks; Limits of metamorphism (4 lectures)  
Metamorphic rocks as solid state chemical systems and associated principles, metamorphic assemblages, chemographic pseudocomponent phase diagrams and role of bulk composition in development of mineral assemblage (8 lectures)

Metamorphic reactions, petrogenetic grids, textures, mineral chemistry and exchange vectors (8 lectures)

Metamorphism of mafic, calcareous and pelitic rocks (8 lectures)

Metamorphic facies and facies series, tectonic context of metamorphism, geothermobarometry (8 lectures)

**12 rounds of student presentations will be arranged in Groups on different topics covered under Theory**

**Practicals:** (12 lectures)

Study of important metamorphic rocks in thin sections: Schists and Amphibolites.  
Plotting of pseudocomponent diagrams.

Mineral formula calculation, Geothermobarometry

### Proposed Projects (extendable)

Metamorphism of orogenic belts  
Low-grade metamorphic characterisation  
Diffusion and chemical zoning  
Crystal size distribution  
Dating of metamorphic events

### Suggested Readings:

1. Principles of Igneous and Metamorphic Petrology by Anthony R. Philpotts and Jay J. Ague. Second Edition, Cambridge University Press.
2. An Introduction to Igneous and Metamorphic Petrology by John D. Winter. Prentice Hall
3. Using Geochemical Data: evaluation, presentation and interpretation by Hugh Rollinson. Longman Scientific and Technical.
4. The study of Igneous, Sedimentary and Metamorphic rocks by Loren A. Raymond. McGraw Hill

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