

Core VI

Elementary Economic Geology

Course Objective

- To explain the process of formation of ore deposits.
- To discourse on Indian distribution of metallic and non-metallic ore minerals
- To provide an understanding of the various economic minerals found in India.

Learning Outcomes:

- Understand the primary and secondary processes of ore formation
- Apply principles of ore genesis and geothermometry
- Appreciate the distribution of various metallic and non-metallic ores in India.

Unit - I: Ore Minerals & Primary Processes

Process of formation of ore bodies: Magmatic concentration, Hydrothermal processes, Wall rock alteration and Paragenesis, Zoning.

Unit - II: Secondary processes

Residual and mechanical concentration, Oxidation and Supergene enrichment, Sedimentation, Evaporation & Metamorphism.

Unit - III: Ore genesis

Ore genesis, Syngenetic & Epigenetic Ores, Formation of Magmatic, Hydrothermal, Metamorphic Fluids and their concentration. Geothermometry, definition, classification, methods for preparation of geological thermometry.

Unit - IV: Economic minerals of India

Metallic and Non-metallic ores of India: Metallic ores, Non-metallic and industrial rocks and minerals, atomic minerals, Gem & Gemstones.

Practical:

- Distribution of Economic Minerals by type in India and the world
- Problems in geothermometry.

Textbooks:

- ✓ *Tiwari, S. K. (2010) Ore Geology, Economic Minerals and Mineral Economics, Atlantic Publishers & Distributors (P) Limited*
- ✓ *Laurence Robb. (2005) Introduction to ore forming processes. Wiley.*

Suggested Reading:

- ✓ *Guilbert, John M. and Charles Frederick Park (2007) The Geology of Ore Deposits, Waveland Press 4. Arogyaswamy R.N.P. (2017) Courses in mining geology, Oxford and IBH publishers*
- ✓ *Evans, A.M. (1993) Ore Geology and Industrial minerals. Wiley*
- ✓ *Ridley, J. (2013): Ore Deposit Geology. Cambridge University Press, UK. P398.*
- ✓ *Guilbert, J.M. and Park Jr., C.F. (1986) The Geology of Ore deposits. Freeman & Co.*