

PRINCIPAL SUBJECT AREA

GEOLOGY

200 LEVEL COURSES

GL 201 Mineralogy (3 credits)

Structure, classification and crystal chemistry of rock-forming minerals and their occurrence and parageneses. Principles of optical mineralogy. Study of optical properties of rock-forming minerals

Identification of rock forming minerals in hand-specimen and under the polarizing microscope

Recommended Texts :

1. Kerr, Paul F. (1959). *Optical mineralogy*, McGraw-Hill, London
2. Gribble, C.D. and Hall, A.J. (1985) *A practical introduction to optical mineralogy*, George Allen & Unwin, London
3. Deer, Howie, and Zussman (1993) *An introduction to rock-forming minerals*, John Wiley and Sons, NY, 696pp.
4. Mackenzie, W.S., Donaldson, C.H. and Guilford, C. (1982). *Atlas of rock-forming minerals*, John Wiley and Sons, NY 3.

GL 202 Economic Minerals and Resource Geology (2 credits)

Introduction to ore-forming processes; overview of nature and geological setting of metallic deposits, coal, graphite, diamond, phosphates, bauxites and placer deposits. Introduction to gemmology; Economic geology of Sri Lanka. Rocks, minerals, and soils as industrial and raw materials. Ore microscopy, identification and study of economic minerals, gems and resource materials.

Recommended Texts :

1. Bateman, Allan M. *Economic Mineral Deposits*, (1960) John Wiley & Sons, Indian Print 1962, - Geol. Lib.
2. Sinha, R.K. (1986) *Industrial Minerals*, Oxford & IBH Publishing, New Delhi.
3. Herath, J.W., (1975) *Economic Geology of Sri Lanka* (Natural Resources Series No. 1) Natural Resources Energy and Science Authority, Sri Lanka.
4. Edwards, R. & Atkinson, K. (1985) *Ore Deposits Geology*, Chapman & Hall, London, Main/Sc. Lib.

GL 203 Soil and Rock Mechanics (2 credits)

Soil properties; soil water, soil stresses, compressibility, consolidation and settlement, shear strength. lateral pressure and retaining structures. Slope stability analysis. Bearing capacity and foundations, improving soil condition and properties; Introduction to physical and mechanical properties of rocks; rock testing, strength and failure of rocks; defects in rock masses. Improvement of properties of rock masses.

Recommended Texts :

1. Dunn, I. S. (1995). *Fundamentals of geotechnical analysis*, John Wiley & Sons, NY.
2. Bell, F.G. (1996). *Engineering properties of Soils and rocks*, McGraw Hill NY
3. Goodman, R.E. (1996), *Rock mechanics*, John Wiley & Sons, NY

GL 204 Water Resources (1 credit)

Surface and groundwater resources. Water for domestic purposes. Industry and Agriculture; Quantity and quality requirements. Depletion of water resource due to pollution and exploitation. Conservation water resources

Recommended Texts :

1. Mustafa and Sulimam, M. (1997). *Environmental hydrogeology*
2. Cook, H.F. (1998). *The protection and conservation of water resources: a British perspectives*

GL 205 Introductory Petrology (3 credits)

Introduction of the fundamentals in petrology; Introduction to igneous rocks, classification, mode of occurrence and tectonic settings, field relations, petrogenesis of common igneous rocks. Study of igneous rocks of Sri Lanka. Introduction to metamorphism, classification, mineralogy and fabrics of common metamorphic rocks and their field associations. Factors controlling metamorphism. Brief study of metamorphic rocks of Sri Lanka. Origin of clastic sediments and their texture and structure. Anatomy of marine environments, sedimentary processes and their products, study of common sedimentary rocks and their genesis. Study of igneous, metamorphic and sedimentary rocks in hand-specimens and thin-sections.

Recommended Texts :

1. Blatt, H., Tracy, R.J. (1996). *Petrology- Igneous, sedimentary, and metamorphic rocks*, W. H. Freeman NY.
2. Philpotts, Anthony R. (1990). *Principals of igneous and metamorphic rocks*, Prentice Hall Publ.
3. Yardley, B.W.D. (1989). *An introduction to metamorphic petrology*, Longmann Publishers.
4. Selley, R.C. (1982) *An Introduction to Sedimentology*.
5. Mackenzie, W.S., Donaldson, C.H. and Guilford, C. (1980). *Atlas of rock-forming minerals in thin-sections*, John Wiley and Sons, NY.
6. Mackenzie, W.S., Donaldson, C.H. and Guilford, C. (1982). *Atlas of igneous rocks and their textures*, John Wiley and Sons, NY.
7. Yardley, B.W.D. and Mackenzie, W.S. (1990). *Atlas of metamorphic rocks and their textures*, John Wiley and Sons, NY.
8. Mackenzie, W.S., Adams, A.E. (1994). *A colour atlas of minerals in thin sections*, John Wiley and Sons, NY

GL 206 Paleontology and Stratigraphy (2 credits)

Methods in paleontology. Fossils and fossilization. trace fossils, plant fossils, microfossils and their uses.

Recommended Texts:

1. Wood, H. (1963). *Paleontology invertebrate*, Cambridge University Press, 477pp.
2. Moore, R.C., Laliker, C.G. and Fisher, A.G. (1952). *Invertebrate fossils*, McGraw-Hill, London, 765 pp.
3. Moltzer, J.G., *Paleontology practical course manual*

GL 207 Geochemistry (2 credits)

Introduction to geochemistry. Primary differentiation of the earth and solar system. Classification and distribution of elements and isotopes. Geochemistry of rocks and minerals. Energy, entropy and fundamental thermodynamic concepts and its application to natural systems. Aqueous solutions in geology; Cosmogenochemistry; Geochemistry of solid earth; Reactions at the earth surfaces-weathering, soils and stream chemistry, Oxidation-reduction; Soil geochemistry and organic geochemistry.

Recommended Texts:

1. Mason, Brian (1966) *Principles of geochemistry*, John Wiley & Sons NY, 329 pp.
2. Krauskopf, Konrad B. *Introduction to geochemistry*.
3. Gill, Robin (1989) *Chemical fundamentals of geology*, Unwin Hymann, London, 292pp.

GL 208 Field Techniques in Geology (1 credit)

Methods of field geology. Introduction to basic geological structures; faults, folds, foliations and geomorphology in geological mapping. Geological cross-sections. Mapping of rock sequences, interpretation of geological field data, preparation of geological maps and cross sections. Production of geological reports

Recommended Texts:

1. Compton, Robert R. (1985) *Geology in the field*, John Wiley & Sons, NY, 378pp.
2. Lahee, F.H.(1981). *Field Geology*, McGraw-Hill Co., NY, 926pp.
3. Mosely, F. (1981). *Methods in field geology*, W.H. Freeman & Co. Publ., California, 211pp.