6. Tucker, M.E. Sedimentary Petrology, 3rd Edn., Blackwell Science, 2001.
7. Sam Boggs Jr., Principles of Sedimentology & stratigraphy, 4th Ed, PEARSON publ, 2006
8. Sam Boggs Jr., Petrologyof Sedimentary Rocks, 2nd Ed. Cambridge Univ press, 2009
9. Greensmith, J. T. Petrology of the Sedimentary Rocks, 7th Ed., UNWIN HYMAN
10. Lindholm, R. C. A Practical Approach to Sedimentology, ALLEN & UNWIN, 1987.

GLC-107: Economic Geology	**3-0-0 = 3 Credits**

Introduction: scope of economic geology Mineral economics. Ore, tenor, gangue, resource, reserves Texture and structures of ore deposits Classification of ore deposits. Ore bearing fluids: type, nature, chemistry Physico-chemical controls of ore deposition Wall-rock alteration. Controls of ore localization. Distribution of ore deposits in relation to plate tectonic settings. Ore Deposits of India (Banded Iron Formations; Iron ore deposits; Manganese ore deposits; Polymetallic ore deposits: copper, lead, zinc; Chromite deposits; Laterite and Bauxite deposits: distribution in India and genesis; Asbestos deposits of India; Barite deposits; Gold in India; Diamond deposits.

List of Books

1. Gilbert and Parks: Geology of Ore Deposits
2. Parks and McDiarmid: Ore Deposits
3. Bateman, A. M. : Economic Mineral Deposits
4. Hutchson: Economic Mineral Deposits
5. Atkinson: Economic Ore Deposits
6. Smirnov: Economic Ore Deposits
7. Jensen, M. L. and Bateman, A. M.,: Economic Mineral Deposits
8. Brown and Dey: The minerals and nuclear fuels of the Indian Subcontinent
9. Burma Roy, B.C., : Indian Mineral Resources: Industries and Economics
10. Deb: Industrial Minerals and Rocks of India
11. Gokhale and Rao: Ore Deposits of India
12. Wadia, D. N.,:Mineral wealth of India
13. Krishnaswami: India's Mineral Resources
14. Arndt N. & Ganino C.: Metals & Society. Springer.
15. Taylor R.: Ore Textures. Springer.

GLC-108: Principles and Stratigraphy and Indian Geology	**3-0-0 = 3 Credits**

Introduction. Stratigraphic principles. Evolution of Stratigraphic column. Stratigraphic (Lithostratigrapic, Chronostratigraphic and Biostratigraphic) nomenclature. Correlation. Stratigraphy of India: Precambrian, Proterozoic, Palaeozoic, Mesozoic and Cenozoic stratigraphic successions. Gondwana stratigraphy. Quaternary stratigraphy.

List of Books :

1. Naqvi, S.M. and Rogers, J.J.W.- Precambrian Geology of India, Oxford University Press.
2. Ramakrishnan, M. and Vaidyanadhan, R. - Geology of India vol. 1 & 2. Geol. Soc. India.
3. Krumbein, W. - Stratigraphy and Sedimentation. W. H. Freeman and Company
4. Prothero, D. - Sedimentary Geology: An introduction to sedimentary rocks and stratigraphy. Freeman & Co.
5. Boggs, S. - Principles of sedimentology and stratigraphy. Pearson Prentice Hall
6. Ravindra, K. - Fundamentals of Historical Geology and Stratigraphy of India. New Age International Limited, Publishers.

GLC-121: Geological Field Mapping	**0-0-2 = 2 Credits**

The student will be taught the techniques of geological mapping, field data collection: recordingthe attitude of beds, foliation, lineation, joints and their analysis. Sampling of rocks, preparation of geological field report. The record of data will be maintained in a field-diary. This work willbe carried out under the supervision of teachers who will accompany the students during the course of the field-traverse. There will be a viva-voce examination based on the field report.

GLC-122: Geological Field Training	**0-0-2 = 2 Credits**

Visit to important mines/mineral deposits; Visit to Industry/Professional Organizations/National Institutes which may include short term in-house training at respective labs. The training program will be carried out under the supervision of teachers. Students are expected to learn the techniques and methodologies applied on site in the professional organizations and also to gain knowledge related to instrumentation. Students are expected to write a detailed report on their visit. There will be a viva-voce examination based on the field report.

GLC-124: Practical of GLC-101 (Mineralogy and Geochemistry)	**0-0-1 = 1 Credit**
Observing and recording properties of representative minerals in hand specimens. Observation and recording of optical properties of major rock forming minerals. Study of anisotropic uniaxial and biaxial minerals in convergent light and determination of the optic sign of the mineral with the aid of suitable accessory plates.	
GLC-125: Practical of GLC-102(Structural Geology& Geotectonics)	**0-0-1 = 1 Credit**
Completion of outcrops. Preparation and interpretation of geological maps and sections; Structural problems concerning economic deposits; Recording and plotting of the field data; Study of deformed structures in hand specimens; Strain estimation from the data already collected from the field.	
GLC-126: Practical of GLC-103 (Igneous Petrology)	**0-0-1=1 credit**
Study of the textures and structures and identification of rocks in hand specimens. Characterisation of the following suites of rocks from micro-sections: ultramafic rocks, mafic igneous rocks, intermediate rocks, granitic rocks and alkaline igneous rocks. CIPW normative calculations of minerals based on available compositional data. Applications of trace elements in igneous petrology, such as spidergrams, REE distribution patterns and implications in deducing origin, source and evolution of magma, and inferencing from trace element ratio plots.	
GLC-127: Practical of GLC-104 (Metamorphic Petrology)	**0-0-1=1 credit**
Description of fabric of common metamorphic rocks in hand specimen and thin section. Description, identification and classification of commonly occurring metamorphic rocks in hand specimen and thin section.	
GLC-128: Practical of GLC-105 (Sedimentology)	**0-0-1=1 credit**
Granulometric analysis, presentation and interpretation of textural data; Palaeocurrent analysis; Megascopic and thin section petrographic study for observation of Texture, composition and diagenetic changes.	
GLC-130: Practical of GLC-107 (Economic Geology)	**0-0-1=1 credit**
Study of representative ores, and industrial minerals in hand specimens. Preparation of charts showing the distribution of ore minerals in India. Mineralogical and textural studies of common ore minerals in incident light.	
GLC-131: Practical of GLC-108 (Prin Stratigraphy & Ind. Geol)	**0-0-1=1 credit**
Study of rocks in hand specimens from known Indian stratigraphic horizons and type localities; Exercises on stratigraphic classification and correlation. Preparation of stratigraphic range charts.	

Optional Courses

GLO-201: Groundwater Geology	**3-0-0 = 3 credits**
Introduction: Genetic classification of water, global distribution of water. Hydrologic cycle: precipitation, runoff, infiltration and evapotranspiration. Historical developments in science of hydrogeology. Vertical distribution of sub surface water, classification of aquifers and confining layers, hydraulic properties of aquifers, water table fluctuations. Concepts of	