

deep ocean phosphatic, polymetallic nodules, sulphate deposits, hydrocarbon deposits. Concept and causes of sea level changes and measurements. Physical and chemical properties of seawater. Residence times. Seismic stratigraphy, sequence stratigraphy. Coastal erosion and protection measures.

List of Books

1. Shepard, Submarine geology
2. Kuenen, P. Marine geology
3. King, Introduction to marine geology and geomorphology
4. Keen, Introduction to marine geology
5. James Kennet, Marine geology, 1982, prentice hall
6. Riley and Chester, Introduction to marine chemistry
7. James Drever, The geochemistry of natural waters.

GLO-208: GIS Fundamentals

3-0-0 = 3 Credits

Introduction; Coordinate Systems: GCS, Map projections, Projected coordinate systems; Data Models: Vector and Raster Data Models; Geodatabase; GIS Data Input; Geometric Transformations; Spatial data Editing; Attribute Data Input and Data Base Management; Data Display & Cartography; Data Exploration; Spatial Analyses: Vector Data Analysis; Raster data Analysis; Terrain mapping and Analysis; Spatial Interpolation; Network and path analysis/applications; GIS Models & Modeling. GIS software and hardware - Review of GIS software packages

List of Books

1. Longley, Geographic Information Systems and Science, 2nd Ed. WILEY, 2003
2. Burrough, P.A. An Introduction to GIS, 1996
3. Chang, K. Introduction to Geographic Information Sc., McGraw Hill, 2002.

GLO-209: Mining Geology

3-0-0 = 3 Credits

Introduction to mining geology and exploration methods. Role of geologists in mining. Mining methods for metal and coal mining. Outlines of surface methods of mining. Underground mining. Shaft sinking and development of mine. Stopping methods. Principles of sampling and sampling methods. Core drilling (wet and dry). Type of core bits. Casing and their applications. Classification and estimation of ore reserves. Mine ventilation, mine gases and mine diseases. Slope stability in open cast mines, dewatering techniques in open cast and underground mines. Environment management. Pollution aspects, impact of mining on environment. Mine evaluation, mineral economics, mineral beneficiation techniques, mining laws, National mineral policy Mineral taxation and mine leasing. Conservation and substitution

List of Books

1. R. N. P. Arogyaswamy : Course in Mining Geology. Oxford & IBH Publishers
2. H. E. McKinstry : Mining Geology. Asia Publishing House
3. G. J. Youn : Elements of Mining Geology. McGraw Hill
4. Sinha and Sharma : Mineral Economics. Oxford & IBH Publishers
5. Taggart : Mineral Ore Dressing.

GLO-210: Coal Geology

3-0-0 = 3 credits

Characteristics: Coal as rock-types of coal-mode of occurrence -structure in coal seams-coals through ages-physical and chemical characteristics of coal-macropetrographics-microlithotypes; Genetics and exploration: Origin-classification of coal-Indian coal grading-exploration of coal-Modern techniques-drilling and logging-assessment of coal reserves-calculation of coal reserves; Preparation and utilization: Coal preparation- cleaning-sizing-washing-supporting operations-beneficiation of Indian coals- coal utilization- combustion-carbonisation-gasification-hydrogenation;

Resources and Environments: Resources-Production and consumption pattern-Energy policy, conservation-environment pollution-reduce environmental hazards-mining hazards