MGS 504: ECONOMIC GEOLOGY AND MINING GEOLOGY

Skills, employability and entrepreneurship: These are most important subjects for the national development in terms of attaining sustainability of water and mineral resources. Similar to the above mentioned subjects with an emphasis on mining techniques are taught in this course. Students have chance to visit mining sites as well as ocean expedition related to ocean mining. Students exit with course have skills to work as an exploration/mining geologists in organizations related to water resources, geological/ marine surveys, seismological stations and mining including the R & D labs. and educational institutions.

Economic Geology

Unit 1	Ore genesis. Classification of ore deposits – renewable and non-renewable, metallogenic provinces and epochs.	4 hrs
Unit 2	Metallic deposits: origin, occurrence, and geology of iron, manganese, copper, gold, aluminium and chromite deposits in India with particular reference to Karnataka.	6 hrs
Unit 3	Non-metallic deposits: origin, occurrence, of minerals used in refractory, abrasives, chemicals, fertilizer, cement and electrical industries, building materials. National mineral policy.	6 hrs
Unit 4	Precious stones: diamonds including gem and industrial varieties. Semiprecious stones: garnet, corundum, beryl etc.	4 hrs
Unit 5	Hydrocarbons: Classification, origin, migration and accumulation of petroleum and natural gas; properties of source and reservoir rocks; structural, stratigraphic and combination traps. Methods of petroleum exploration. Petroliferous basins with special reference to India. Gas hydrates.	6 hrs
Unit 6	Coal: Definition, origin, rank and grading. Peat, lignite, bituminous coal and anthracite. Coal petrology. Gondwana and Tertiary coal resources of India. Coal bed methane. Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum.	4 hrs

Mining Geology

Unit 7	Introduction, definition, aim, and scope of mining of natural resources. Methods of mining / quarrying: alluvial mining, open cast mining, loading, glory hole, kaoline mining, quarrying.	6 hrs

Unit 8	Underground mining methods - stopping and caving, coal and metallic mineral mining. Ventilation and mine supports. Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum.	4 hrs

List of References:

1) D.S. Cronan: Underwater minerals (1980).
2) Bateman, Economic Mineral Deposits (1979).
3) Brown and Dey, India's Mineral Wealth - Oxford University Press (1975).
4) Kirshnaswamy, Indian Mineral Resources
5) Skinner, Earth Resources (1995).
6) Deb, S., Industrial Minerals and Rocks of India (1987) - Allied Publishers.
7) W.H. Freeman and Park C.F. Ore Deposits (1975).
8) Sinha and Sharma. Mineral Economics (1980).
9) An Open University Course Team (1989): Seawater: Its composition, properties and behaviour (p. 33)
10) Bhandari, L. L. and Venkatachala, B.S. (Ed.): Petroliferous basins of India.
11) Bjorlykke K. (1984): Sedimentology and Petroleum Geology.
12) Abdulin, F.: Petroleum of Oil and Gas (1985).
13) Sidorov, N. A.: Drilling Oil and Gas wells (1985).
14) G.S. Roonwal: The Indian Ocean: Exploitable Mineral and Petroleum Resources (1986).
15) G.S. Roonwal (1989): Marine minerals in the Ocean. JGSI, 34:182-192.
16) Dictionary of Oil and Gas Production: Clifford Jones.
17) The Myth of the Oil Crisis: Robin M. Mills.
18) Petroleum Geochemistry: Satyanarayana- Daya Publishers.
19) A hand book of minerals, rocks and ores: Alexander. P.O (2009) - New India Publishing Agency.