

**DEPARTMENT OF ENVIRONMENTAL SCIENCE & ENGINEERING  
INDIAN SCHOOL OF MINES UNIVERSITY  
DHANBAD**

Semester : Winter (2008-2009)


Group: B. Tech. (Environmental Science & Engineering)

Subject: Geology for Environmental Engineering

ESC 141 03

[4-1-0]

Topics	No. of Lectures
Branches of geology ; Earth's – its origin, internal constitution and age	3
Atmosphere, hydrosphere, lithosphere and their constituents	1
Structural features- folds, faults, unconformities, plate-tectonics	3
Geological agents- earthquakes, volcanoes	2
Geological work of river, wind	3
Overview of topo sheets and geological maps and contouring	1
Minerals-its properties, Properties of common rock forming minerals	1
Crystals and crystals system	2
Classification of minerals and study of common silicate minerals (Quartz, Feldspar, Pyroxene, Mica), sulphide (pyrite, chalcopyrite, galena, Sphalerite) and Oxides (Haematite, Magnetite, Chromite, Pyrolusite, Psilomelane).	3
Igneous rocks: Classification of rocks; Magma- its composition and constitution, classification and structure of igneous rocks; description of some common igneous rocks (Periodotite, Dolerite, Basalt, Granite, Rhyolite).	4
Sedimentary rocks: Sedimentation process, classification and structure of sedimentary rocks; description of some common sedimentary rocks (Conglomerate, Sandstone, Shale, Limestone).	4
Metamorphic rocks: Processes of metamorphism, structures of metamorphic rocks: description of some common metamorphic rocks (State, Schist, Gneiss, Quartzite, Marble).	4
Hydrology: Aquifers- types and parameters	1
Delineation of watershed and its characteristics	2
Calculation of TARR value and Pumping test studies	2
Economic Geology- Ore and Gangue minerals, Formation of mineral deposits	2
Mode of occurrence, distribution and uses of some important minerals	2
Coal Geology- Coal-its composition and origin; Distribution of Indian coals	2
Stratigraphy- Geological time scale, Various stratigraphic units of India	2
Palaeontology- Fossils, their mode of preservation and uses, Geological history, index fossils	2
<b>Total</b>	<b>46</b>

  
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Semester : Winter (2008-2009)

Group : B. Tech. (Environmental Science & Engineering) & M.Tech. (ESE)

Subject : Remote Sensing & GIS      ESC 141 04 (B.Tech.) and ESE 521 08 (M.Tech.)

	Topics	No. of Lectures
1	Introduction to Remote Sensing	1
2	Types of Remote Sensing	1
3	Advantages of Remote Sensing	1
4	Applications of Remote Sensing	1
5	History of Remote Sensing	1
6	Physical basis of Remote sensing	2
7	Electromagnetic Spectrum	1
8	Spectral reflectance curves	1
9	Spectral signatures	1
10	Resolution	1
11	Remote Sensing platforms	1
12	Important Remote Sensing Satellites	1
13	Remote Sensing Sensors	1
14	Major Remote Sensing Sensors	2
15	Aerial photography/ Aerial Photo-Interpretation	4
16	Digital Image Processing	2
17	Pixels & Digital Number	2
18	Image Processing-Image Restoration, Image Enhancement, Image Transformation, Image Classification & Analysis	5
19	Image interpretation	3
20	GIS-Introduction	2
21	Preparation of Thematic Map from Remote Sensing data	2
22	Co-ordinate Systems	2
23	GIS components- Hardware, software and infrastructure	3
24	GIS Data types- Data input and Data processing	2
25	DEM/ DTM generation	2
26	Integration of Remote Sensing & GIS	2
27	Case studies	3
	<b>Total</b>	<b>50</b>

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