



# IIPM SCHOOL OF ENGINEERING & TECHNOLOGY

## LESSON PLAN: 2023-24

### Sub: Th.2- Mine Geology II (MG-II)

Branch	:	Mining	Semester	:	6 <sup>th</sup>
Faculty name	:	Soumya Ranjan Dash			
Duration	:	60 hours			
Syllabus	:				

UNIT 01	<b>Stratigraphy</b> <input type="checkbox"/> Describe the principles of stratigraphy. <input type="checkbox"/> Describe the geological time Scale. <input type="checkbox"/> Describe the stratigraphic sequence, lithology, distribution & economic mineral deposits of Iron Ore series, Cuddpah Supergroup, Vindhyan super group & gondwana super group.
UNIT 02	<b>Fossil fuels</b> o Coal <input type="checkbox"/> Describe the different ranks of coal. <input type="checkbox"/> Describe different grades of coal like A,B,C,D. <input type="checkbox"/> Describe the various theories accounting for the origin of coal. <input type="checkbox"/> Describe various important lower gondwana Coalfields of India. o Petroleum <input type="checkbox"/> Describe the organic & inorganic theories accounting for the origin of petroleum. <input type="checkbox"/> Define oil pool & oil trap. <input type="checkbox"/> Describe process of accumulation of oil. <input type="checkbox"/> Describe favorable conditions for accumulation of oil. <input type="checkbox"/> Describe different important oil fields in India.
UNIT 03	<b>Prospecting &amp; exploration.</b> <input type="checkbox"/> Define prospecting. <input type="checkbox"/> Differentiate between prospecting & exploration. <input type="checkbox"/> Use of multi shot camera for borehole direction test. <input type="checkbox"/> Enumerate & describe various criteria for geological exploration. <input type="checkbox"/> Describe various methods of Geophysical prospecting. <input type="checkbox"/> Explain Geochemical prospecting. <input type="checkbox"/> Differentiate between biogeochemical & geo botanical prospecting
UNIT 04	<b>Economic Geology</b> <input type="checkbox"/> Define ore & gangue. <input type="checkbox"/> Define tenor & grade. <input type="checkbox"/> Describe the mineralogy, mode of occurrence, distribution & use of iron ore deposits in India. <input type="checkbox"/> Describe the mineralogy, mode of occurrence, & description of Chromites deposits in India & its uses. <input type="checkbox"/> Describe the mineralogy, mode of occurrence & distribution of copper deposits in India & uses of this metal. <input type="checkbox"/> Describe the mineralogy, mode of occurrence, distribution of lead & zinc deposits in India & the uses of these metals. <input type="checkbox"/> UNFC (United Nation Framework of Classification) code of classification of reserves.
UNIT 05	<b>Sampling</b> <input type="checkbox"/> Define sampling, outline the method of preparation of samples for assay.

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| <input type="checkbox"/> Explain sampling<br><input type="checkbox"/> Describe the different methods of sampling as outlined by Bureau of Indian Standards. (BIS) |
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### Books Suggested:

- Geology of India                    M S Krishnan
- Geology of Petroleum            A I Levorson
  
- Mineral Economics                R K Sinha
- Economic Geology                 Umeshwar Prasad

### Objective :

- Outline the importance of Stratigraphy & Geological time Scale in the study of geology.
- The major Groups & economic minerals associated with them that form the basis for the study of stratigraphy.
- Describe the use, origin mode of occurrence & distribution of fossil fuels & where to look for them.
- Explain the fundamental principles that underline the search for economic minerals. He will achieve a certain amount of clarity in using geological, geophysical & geochemical methods for looking for important mineral deposits.
- Develop a comprehensive idea regarding mineralogy mode of occurrence, uses & distribution of ores.
- Undertake sampling work according to BIS specification.

**Learning Outcome:** In majority of the cases, materials that need to be explored comprise rocks & minerals. It is therefore, essential for an engineer to have basic knowledge of mining geology.

Sl. No	Chapter	Proposed Week for Teaching	Lecture No.	Sub. Topic	Important Teaching Points	Content Source
01	I	1	1	Stratigraphy	Principles of Stratigraphy	M.S Krishnan GM Banger
02			2	Stratigraphy	Geological Timescale	M.S Krishnan GM Banger
03			3	Stratigraphy	Iron Ore Group	M.S Krishnan GM Banger
04			4	Stratigraphy	Iron Ore Group	M.S Krishnan GM Banger
05		2	5	Stratigraphy	Cuddpah Supergroup	M.S Krishnan GM Banger
06			6	Stratigraphy	Cuddpah Supergroup	M.S Krishnan GM Banger
07			7	Stratigraphy	Vindhyan Supergroup	M.S Krishnan GM Banger
08			8	Stratigraphy	Vindhyan Supergroup	M.S Krishnan GM Banger
09		3	9	Stratigraphy	Gondwana Supergroup	M.S Krishnan GM Banger

10			10	Stratigraphy	Gondwana Supergroup	M.S Krishnan GM Banger
11			11	Stratigraphy	Unit Test- I	
12			12	Stratigraphy	Revision	
13	II	4	1	Fossil Fuels	Ranks of Coal	U Prasad K M Banger
14			2	Fossil Fuels	Grades of Coal	U Prasad K M Banger
15			3	Fossil Fuels	Origin of Coal	U Prasad K M Banger
16			4	Fossil Fuels	Lower Gondwana Coalfields of India	U Prasad K M Banger
17		5	5	Fossil Fuels	Origin of Petroleum	A I Levorsen K M Banger
18			6	Fossil Fuels	Oil Pool & Oil Trap	A I Levorsen K M Banger
19			7	Fossil Fuels	Process of accumulation of Oil	A I Levorsen K M Banger
20			8	Fossil Fuels	Conditions for accumulation of Oil	A I Levorsen K M Banger
21		6	9	Fossil Fuels	Important Oilfields in India	A I Levorsen K M Banger
22			10	Fossil Fuels	Important Oilfields in India	A I Levorsen K M Banger
23			11	Fossil Fuels	Unit Test- II	
24			12	Fossil Fuels	Revision	
25	III	7	1	Prospecting & Exploration	Introduction Prospecting	P K Guha K M Banger
26			2	Prospecting & Exploration	Differentiate between prospecting & Exploration	P K Guha K M Banger
27			3	Prospecting & Exploration	Use of multi sbhot camera for borehole direction test	P K Guha K M Banger
28			4	Prospecting & Exploration	Geological Exploration	P K Guha K M Banger
29		8	5	Prospecting & Exploration	Geological Exploration	P K Guha K M Banger
30			6	Prospecting & Exploration	Geophysical Exploration	P K Guha K M Banger

31		9	7	Prospecting & Exploration	Geophysical Exploration	P K Guha K M Banger
32			8	Prospecting & Exploration	Geochemical Exploration	P K Guha K M Banger
33			9	Prospecting & Exploration	Geochemical Exploration	P K Guha K M Banger
34			10	Prospecting & Exploration	Difference between biogeochemical geobotanical prospecting	P K Guha K M Banger
35			11	Prospecting & Exploration	Unit Test- III	
36			12	Prospecting & Exploration	Revision	
37	IV	10	1	Economic Geology	Ore, Gangue	U Prasad K M Banger
38			2	Economic Geology	Tenor & Grade	U Prasad K M Banger
39			3	Economic Geology	Iron Deposits in India	U Prasad K M Banger
40			4	Economic Geology	Iron Deposits in India	U Prasad K M Banger
41		11	5	Economic Geology	Chromite Deposits in India	U Prasad K M Banger
42			6	Economic Geology	Chromite Deposits in India	U Prasad K M Banger
43			7	Economic Geology	Copper Deposits in India	U Prasad K M Banger
44			8	Economic Geology	Copper Deposits in India	U Prasad K M Banger
45		12	9	Economic Geology	Lead & Zinc Deposits in India	U Prasad K M Banger
46			10	Economic Geology	UNFC code of classification of reserves	U Prasad K M Banger
47			11	Economic Geology	Unit Test- IV	
48			12	Economic Geology	Revision	
49	V	13	1		Introduction to Sampling	R K Sinha K M Banger
50			2		Methods of preparation of samples for assay	R K Sinha K M Banger
51			3		Methods of preparation of samples for assay	R K Sinha K M Banger

52			4		Explanation of Sampling	R K Sinha K M Banger
53		14	5		Explanation of Sampling	R K Sinha K M Banger
54			6		Explanation of Sampling	R K Sinha K M Banger
55			7		Types of sampling	R K Sinha K M Banger
56			8		Types of sampling	R K Sinha K M Banger
57			15	9		Methods of Sampling by BIS
58		10			Methods of Sampling by BIS	R K Sinha K M Banger
59		11			Unit Test- V	
60		12			Revision	

### Books Suggested:

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Signature of

Faculty Member

HOD

Principal/ Director