

Discipline: Drilling Engineering	Semester: 3rd semester	Name of the Teaching Faculty: 1) MRS.SAMAPIKA DASH	
Subject: Engineering Geology - I Sub code: Th.3	No of days /week class allotted: 04	Semester from Date: 01/10/2021 to 18/1/2022 No of weeks: 15	
week	Class Day	Theory topics	Practical topics
1 st	1 st	Introduction about Geology and different branches of geology and scope of Geology for Mining Engineering	Identification of rock forming mineral in hand specimens.
	2 nd	<u>The origin, nature, and geological classification of rock materials;</u> Internal structure of earth; Introduction about classification of the internal structure, The crust	Identification of rock forming mineral in hand specimens.
	3 rd	Internal structure of earth; The Mantle & The Core.	Identification of rock forming mineral in hand specimens.
	4 th	Rocks and minerals with example.	Identification of rock forming mineral in hand specimens.
2 nd	1 st	Igneous rocks and its types	Identification of rock forming mineral in hand specimens.
	2 nd	Sedimentary rocks and its types	Identification of rock forming mineral in hand specimens.
	3 rd	Metamorphic rocks and its types	Identification of rock forming mineral in hand specimens.
	4 th	<u>Surface processes causing rock disintegration</u> Weathering and different types of weathering. <ul style="list-style-type: none"> Physical weathering, 	Identification of rock forming mineral in hand specimens.
3 rd	1 st	Weathering and different types of weathering. <ul style="list-style-type: none"> Chemical weathering Biological weathering. 	Identification of rock forming mineral in hand specimens.
	2 nd	Erosion, difference between erosion and weathering.	Identification of rock forming mineral in hand specimens.
	3 rd	<u>Erosional land forms produced by wind;</u> <ul style="list-style-type: none"> Introduction & process of wind erosion, Desert pavement, Hamada, blow-out, yardang. 	Identification of rock forming mineral in hand specimens.

	4 th	<u>Erosional land forms produced by wind;</u> <ul style="list-style-type: none"> • ventifacts, • mushroom rock, • cave rock, 	Identification of rock forming mineral in hand specimens.
4 th	1 st	<u>Depositional land forms produced by wind;</u> Introduction about how wind deposits the sediments. Loess, Sand dunes; its formation and types: longitudinal dunes, transverse dunes, barchans, parabolic dunes, star dunes.	Identification of rock forming mineral in hand specimens.
	2 nd	<u>Erosional land forms produced by river;</u> Introduction, river profile, ideas about process of river erosion,	Identification of rock forming mineral in hand specimens.
	3 rd	<u>Erosional land forms produced by river;</u> Potholes, river valley, georges & canyon.	Identification of rock forming mineral in hand specimens.
2	4 th	<u>Erosional land forms produced by river;</u> Escarpment, dipslope, cuesta, hogback	Identification of rock forming mineral in hand specimens.
5 th	1 st	<u>Erosional land forms produced by river;</u> Mesa & butte, water-fall, peneplain, pediplain, river-terraces, wadies.	Identification of rock forming mineral in hand specimens.
	2 nd	Flood plain deposits, meanders & ox-box lake.	Identification of rock forming mineral in hand specimens.
	3 rd	<u>Depositional land forms produced by river;</u> How the river deposits sediments Alluvial fans & cones,	Identification of ore forming Minerals in hand specimens.
3 rd	4 th	<u>Depositional land forms produced by river;</u> Natural levee, braided river, delta.	Identification of ore forming Minerals in hand specimens.
	1 st	process of glacier erosion	Identification of ore forming Minerals in hand specimens.
	2 nd	<u>Erosional features produced by glacier;</u> Introduction about glacier movement, difference between ice, snow, glacier	Identification of ore forming Minerals in hand specimens.
	3 rd	<u>Erosional features produced by glacier;</u> Cirque, arete, horn, cols, U-shape valley	Identification of ore forming Minerals in hand specimens.
	4 th	<u>Erosional features produced by glacier;</u> Hanging valleys, tarn, nunatak, crag & tails.	Identification of ore forming Minerals in hand specimens.
7 th	1 st	Surprise test.	Identification of ore forming Minerals in hand specimens.
	2 nd	<u>Erosional features produced by glacier;</u> Roches montonnees, glacial stairway, glacial groves, fiords, paternoster lake	Identification of ore forming Minerals in hand specimens.

	3 rd	<u>Depositional land forms produced by glacier;</u> How glacier deposits sediments, till, erratic, drumlins, basket-egg topography.	Identification of ore forming Minerals in hand specimens.
	4 th	What is ice-berg? Difference between glacier & ice-berg.	Identification of ore forming Minerals in hand specimens.
8 th	1 st	<u>Moraine & its types;</u> Ground moraine, end moraine, terminal moraines,	Identification of ore forming Minerals in hand specimens.
	2 nd	<u>Moraine & its types;</u> medial moraine, lateral moraine, recessional moraine.	Identification of ore forming Minerals in hand specimens.
	3 rd	<u>Elements of Mineralogy</u> Minerals and rock forming and ore forming minerals with examples	Identification of ore forming Minerals in hand specimens.
	4 th	<u>Physical properties of minerals</u> Color, streak, luster.	Identification of ore forming Minerals in hand specimens.
9 th	1 st	<u>Physical properties of minerals</u> Hardness, Moh's hardness scale, habit, odor, feel.	Identification of ore forming Minerals in hand specimens.
	2 nd	<u>Physical properties of minerals;</u> Cleavage, fracture, tenacity,	Identification of ore forming Minerals in hand specimens.
	3 rd	<u>Physical properties of minerals;</u> Specific gravity, fluorescence, phosphorescence, magnetism.	Identification of Industrial mineral in hand Specimen
	4 th	<u>Silicate structure</u> What is silicate structure, neso-silicate, soro-silicate.	Identification of Industrial mineral in hand Specimen
10 th	1 st	<u>Silicate structure</u> Cyclo-silicate, phyllo-silicate, tecto-silicate.	Identification of Industrial mineral in hand Specimen
	2 nd	Physical properties of Quartz group of minerals.	Identification of Industrial mineral in hand Specimen
	3 rd	Physical properties of Feldspar group of minerals.	Identification of Industrial mineral in hand Specimen
	4 th	<u>Various optical properties of minerals.</u> <ul style="list-style-type: none"> • Isotropic, anisotropic, • refractive index, • double refraction, 	Identification of Industrial mineral in hand Specimen
11 th	1 st	<u>Various optical properties of minerals.</u> <ul style="list-style-type: none"> • Birefringence, • uniaxial minerals, • biaxial minerals. 	Identification of Industrial mineral in hand Specimen
	2 nd	<u>Various optical properties of minerals.</u>	Identification of Industrial mineral in

		Extinction, pleochroism, interference colour.	hand Specimen
	3 rd	Structural Geology Introduction to structural Geology and Description of Outcrop, bed, Dip, Strike, True dip and apparent dip with diagram	Identification of Industrial mineral in hand Specimen
	4 th	Fold and different parts of fold with diagram.	Identification of Industrial mineral in hand Specimen
12 th	1 st	Description of different types of fold	Identification of Industrial mineral in hand Specimen
	2 nd	Description of different types of fold	Identification of Industrial mineral in hand Specimen
	3 rd	Faults and terminology of fault.	Identification of Industrial mineral in hand Specimen
	4 th	Description of different types of Fault with diagram.	Identification of Industrial mineral in hand Specimen
13 th	1 st	Description of different types of Fault with diagram.	Identification of Industrial mineral in hand Specimen
	2 nd	Recognition of faults in the field	Identification of Industrial mineral in hand Specimen
	3 rd	Joints and its types	Field visit(Gr-1)
	4 th	Unconformity and how the unconformities have been formed in nature	Field visit(Gr-2)
14 th	1 st	Study of different types of unconformities <ul style="list-style-type: none"> • Angular Unconformity • Disconformity 	Lab practice
	2 nd	Study of different types of unconformities <ul style="list-style-type: none"> • Para unconformity • Non-conformity 	Lab practice
	3 rd	DOUBT CLEARING CLASS	Lab practice
	4 th	DOUBT CLEARING CLASS	Lab practice
15 th	1 st	MOCK TEST	TEST
	2 nd	MOCK TEST	TEST
	3 rd	MOCK TEST	TEST
	4 th	MOCK TEST	TEST

Dash
1/10/21

Lecturer in Geology
O.S.M.E., Keonjhar