Discipline: **Drilling Engineering**	Semester: **5th semester**	Name of the Teaching Faculty:**1) MRS.SAMAPIKA DASH (Regular)** **2) Ms. Saziya Khurshid (PTGF)**	
Subject: **Engineering Geology - III** Sub No: **Th.3**	No of days /week class allotted:**04**	Semester from Date:**01/09/2021 to 18/01/2022** No of weeks:**15**	
week	**Class Day**	**Theory topics**	**Practical topics**
1st	1st	**Geology of Soils** Introduction about soil and its formation Define soil and the various types of soils	Interpretation of structural maps for litho-studies of engineering sites
	2nd	Soil Forming process and factors	
	3rd	Types of soil Residual soil Transported soil	Interpretation of structural maps for litho-studies of engineering sites
	4th	Soil profile/horizons	
2nd	1st	Engineering properties of soils; introduction	Interpretation of structural maps for litho-studies of engineering sites
	2nd	Engineering properties of soils; Specific gravity, particle size analysis, particle size distribution curve.	
	3rd	Engineering properties of soils; Permeability, shear strength, cohesion, capillarity, moisture content.	Interpretation of structural maps for litho-studies of engineering sites
	4th	Engineering properties of soil; Atterberg limits, compaction. Soil mineralogy	
3rd	1st	**Formation of ore deposits** What is ore, gangue, tenor & grade with example.	Interpretation of structural maps for litho-studies of engineering sites
	2nd	Introduction about different process of formation ore deposits	
	3rd	Magmatic concentration deposits what is magmatic concentration deposits, early magmatic deposits.	Interpretation of structural maps for litho-studies of engineering sites
	4th	Magmatic concentration deposits late magmatic deposits.	
4th	1st	Hydrothermal deposits Hydrothermal solutions, how these are deposited, classification based on temperature of deposition.	Interpretation of structural maps for litho-studies of engineering sites

	2nd	Hydrothermal deposits Classification based on mode of formation, cavity filling deposits.	
	3rd	Hydrothermal deposits Replacement deposits and doubt clearing.	Interpretation of structural maps for litho-studies of engineering sites .
	4th	Sedimentation process helps in formation of mineral deposits. How the sedimentation occurs and how it helps in ore formation.	
5th	1st	Examples and various features of sedimentation deposits.	
	2nd	Contact metasomatism; how these process help in ore deposits with example.	Interpretation of structural maps for litho-studies of engineering sites
	3rd	Pegmatite; what are pegmatite and how these are the store house of minerals.	
	4th	Oxidation and supergene enrichment process How the process occurs, zone of oxidation, supergene enrichment with examples.	Interpretation of structural maps for litho-studies of engineering sites .
6th	1st	Residual and mechanical concentration deposits What is residual deposits and how these are formed with example	
	2nd	Residual and mechanical concentration deposits. How the mechanical concentration occurs,	Geological interpretation of borehole data.
	3rd	Placers and its types.	Geological interpretation of borehole data.
	4th	Surprise test.	
7th	1st	**Engineering geology** Engineering properties of rocks; Use of rocks in Engineering projects, what are the various engineering properties of rocks.	Geological interpretation of borehole data.
	2nd	Engineering properties of rocks; Crushing strength, transverse strength, shear strength.	
	3rd	Engineering properties of rocks; Tensile strength, porosity & its types, permeability & its type.	Geological interpretation of borehole data.
	4th	Engineering properties of rock;	

		Absorption value, density, abrasive resistance, frost & fire resistance, modulus of deformation.	
8th	1st	What is dam, terminology associated with dam.	Geological interpretation of borehole data.
	2nd	Different types of Dam.	
	3rd	Criteria for selection of dam site.	Geological interpretation of borehole data..
	4th	Reservoir and describe the criteria for selection of a Reservoir site.	
9th	1st	Reservoir and describe the criteria for selection of a Reservoir site.	Geological interpretation of borehole data.
	2nd	Describe the geology of bridge sites. What is bridge and terminology associated with it and its type.	
	3rd	Describe the geology of bridge sites. Forces acting on bridge and criteria for site selection	Geological interpretation of borehole data.
	4th	Describe the geology of tunnel sites. What is a tunnel and its constructional features.	
10th	1st	Describe the geology of tunnel sites. Criteria for site selection.	Measurement of dip and strike of strata
	2nd	Describe the geology of tunnel sites. Criteria for site selection	
	3rd	**Groundwater Engineering** How water are present in earth surface & origin of groundwater.	Measurement of dip and strike of strata
	4th	Occurrence of groundwater.	
11th	1st	Hydrological cycle; Introduction & how it occurs.	Measurement of dip and strike of strata
	2nd	Hydrological cycle; Processes and significance.	
	3rd	Vertical distribution of groundwater. Zone of aeration	Measurement of dip and strike of strata
	4th	Vertical distribution of groundwater. Zone of saturation and water table.	
12th	1st	Surprise Test	Measurement of dip and strike of strata
	2nd	Types of water bearing formation, Aquifer and its types. Aquiclude, aquifuge and aquitard.	

	3rd	Aquiclude, aquifuge and aquitard.	Measurement of dip and strike of strata
	4th	Porosity and its types and factors controlling porosity.	
13th	1st	Permeability and its types.	Lab practice
	2nd	What is safe yield and overdraft, Impacts of overdraft on environment.	
	3rd	What is artificial recharge and why it is needed.	Lab practice
	4th	Methods of artificial recharge, Direct methods; surface methods.	
14th	1st	Methods of artificial recharge, Direct method; sub-surface method.	Lab practice
	2nd	Methods of artificial recharge, Indirect method.	
	3rd	DOUBT CLEARING CLASS	Lab practice
	4th	DOUBT CLEARING CLASS	
15th	1st	MOCK TEST	TEST
	2nd	MOCK TEST	
	3rd	MOCK TEST	TEST
	4th	MOCK TEST	

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