

Rajeev Gandhi Govt. Post Graduate College, Ambikapur-497001, Chhattisgarh, India

Department of Geology

CROSS CUTTING ISSUES

B.Sc. (Geology)

Programme Name	Course Code	Course Name	Description	Cross Cutting Issues			
				Gender	Human Values	Professional Ethics	Environment & Sustainability
B. Sc. I Year/ I Sem. (Geology)	DSC- GEOL- 101	Geodynamics & Geomorphology	<p>Introduction to Geology:</p> <ul style="list-style-type: none"> Introduction to Geology and its branches and importance, Introduction to solar system: Star, Planet, Satellite, Asteroid and meteorite. Earth in the solar system; size, shape, mass and density, Origin of Earth, Internal structure of Earth, Crust, Mantle and Core, Age of Earth: Various methods of determination of age of the earth. 			✓	
			<p>Dynamic Earth:</p> <ul style="list-style-type: none"> Concept and theories of continental-drift, Sea floor spreading and evidences, Concept of plate tectonics, tectonic plates, types and plate boundaries, Introduction to paleomagnetism and polar wandering, Mid-oceanicridges, trenches and island arcs. 			✓	✓
			<p>Geomorphic Processes:</p> <p>Earthquakes: Causes and effects, Earthquake Belts, measurement of Earthquakes. Seismic zones of India, Volcanoes: Types and distribution, Fundamental concepts of geomorphology, Geomorphicalagents and processes of rock weathering.</p>			✓	
			<p>Geological Work:</p> <p>Geological work of rivers; Fluvial landforms, Geological work of ground water and karst topography, Geological work of wind; Aeolian landforms, Geological work of Glaciers; glacial land forms. Geological work of oceans; coastal landforms, Volcanic landforms, Physiographic and tectonic divisions of India.</p>			✓	✓
			1:-Study of models showing various geomorphic features			✓	

B. Sc. 3 rd Sem. (Geology)	DSE-GEOL-101 DSE	LAB WORK	Diagrammatic representation of various form & structures of igneous, sedimentary & metamorphic rocks . : Introduction to petrology: Heat flow, geothermal gradients through time, origin and nature of magma.				✓	✓
		Igneous Petrology	Binary and Ternary phase diagrams in understanding crystal-melt equilibrium in basaltic and granitic magmas.Magma generation in crust and mantle, their emplacement and evolution				✓	
			Magmatism in the oceanic domains (MORB,OIB). Magmatism along the plate margins (Island arcs/continental arcs)				✓	✓
			Binary and Ternary phase diagrams in understanding crystal-melt equilibrium in basaltic and granitic magmas. Magma generation in crust and mantle, their emplacement and evolution.				✓	
			Classification of igneous rocks. Texture and Structures of igneous rocks. Mode of occurrence of Igneous rocks.				✓	✓
	Lab-	Study of important igneous rocks in hand specimens and thin sections- granite, granodiorite, diorite, gabbro, anorthosites, ultramafic rocks, basalts, andesites, trachyte, rhyolite, dacite.				✓		
B. Sc. 4 th Sem. (GOLOGY)	DSC-GEOL-104-DSC	Structural Geology	Definition and scope of Structural Geology, Study of outcrops, Effects of dip and slope on outcrops. dentification of bedding, Dip and strike measurement. Clinometer and Brunton compass. Recognition of top and bottom of beds. Concept of rock deformation, Concept of stress and strain ellipsoids.				✓	
			Fold morphology. Geometric and genetic classification of folds. Recognition of folds in the field and on geological maps. Effects of folds on outcrops. Elementary idea of mechanics of folding.				✓	✓
			Types and recognition of Unconformity. Outlier and inlier, Overlap &offlap. Concept of tectonics. Tectonic framework of Peninsula, Indo-Gangetic Plains and Extra-Peninsular India Stereographic projection & it use in Structural geology.				✓	
			<ul style="list-style-type: none"> • Fault morphology, Slip and separation. • Geometric and genetic classification of faults. 				✓	

		Lab Work	<ul style="list-style-type: none"> • Recognition of faults in the field and on geological maps. • Effect of faults on outcrops. Elementary idea of mechanics of faulting							
								✓	✓	
B. Sc. 4 TH (GEOLOGY)	DSEC-GEOL-02 DSE	Sedimentary Petrology	Origin of sediments Weathering and sedimentary flux; Physical and chemical weathering, soils and paleosols.					✓	✓	
			Sediment granulometry Grain size scale, particle size distribution, Environmental connotation; particle shape and fabric							
			Textures, structures and environment Fluid flow, Sediment transport and sedimentary structure: Types of fluids, Laminar VS. turbulent flow, Particle entrainment, transport and deposition. Paleocurrent analysis- Paleocurrent for different sedimentary environment. Primary & secondary sedimentary structures.						✓	✓
			Types of Sedimentary Rocks Siliciclastic rocks: Conglomerates, sandstones, mudrocks Carbonate rocks, controls of carbonate deposition, components and classification of limestone, dolomite & dolomitisation						✓	✓
		Diagenesis: Concepts of diagenesis, Stages of diagenesis, compaction and cementation.							✓	✓
		LAB	Study of important Sedimentary rocks in hand specimens and thin sections. Conglomerate, Limestone, etc.					✓	✓	
B. Sc. 5 TH (GEOLOGY)	DSC-GEOL-105	Palaeontology and Stratigraphy	Study of plant fossils & their significance.					✓	✓	
			Distribution, classification & Economic importance of Archaeozoic rocks of India (Dharwar).						✓	✓
			Distribution, classification & Economic importance of Vindhya & Chhattisgarh group of rocks, Stratigraphy, Palaeoclimate, Geographical distribution & economic aspects of Gondwana rocks, Stratigraphy, distribution and age of Deccan Traps.						✓	✓

		Lab Work	<ul style="list-style-type: none"> • Study of Morphology of Fossils belonging to various phyla. • Study of Important plant fossils. • Representation of Litho-units & Stratigraphic Units in out line map of India. • Sketching of physiographic and tectonic divisions of India. 			✓	✓
B. Sc. 5 TH (GEOLOGY)	DSE-GEOL-103		Mineral deposits and Classical concept of Ore formation. Mineral occurrence, Mineral deposit and Ore deposit. Mining Plutonist and Neptunist concepts of ore genesis.			✓	✓
			Exploration and exploitation techniques.Remote Sensing, Geological mapping at different scales, Drilling, Borehole logs and transverse sections.			✓	✓
		Lab Wok	Atomic minerals : Important deposits of India.Introduction to gemstones.			✓	✓
			Study of microscopic properties of ore forming minerals. Preparation of maps : Distribution of important ores and other economic minerals in India.			✓	✓
B. Sc. 6 TH (GEOLOGY)	GEOL106	Earth Resources & Applied Geology	Weathering: product & Residual deposit, Oxidation & sulphide supergene Enrichment processes.Sedimentary processes of mineral formation, Placer deposits.			✓	✓
			Fundamentals of coal petrography, Peat, Lignite, Bituminous & Anthracite Coal deposits of Chhattisgarh.Origin of Natural-hydrocarbon, migration & accumulation, Types of oil traps: Structural, stratigraphic and composite, Offshore & onshore oil deposits of India.Radioactive mineral: Mineralogy, Geochemistry, Prospecting techniques, Geological & Geographical distribution of atomic-mineral.			✓	✓

		LAB WORK	Prospection methods: Drilling, Sampling & Assaying. Geophysical prospecting techniques: Gravity, Electrical & Magnetic methods. Aerial and seismic prospecting methods.			✓	✓
			Study of important metallic/non-metallic minerals on the basis of physical & optical properties. Distribution of main metallic/non-metallic deposits within outline map of India. Magasopic studies of coal & its varieties. Exercises related with mineral exploration; Reserve calculation, Tonnage factor calculation, Exercises related with drilling.			✓	✓

B. Sc. 6 TH (GEOLOGY)	DSE-GEOL-104	URBAN GEOLOGY	Necessity of Geology in Urban life. Geology in Urban Constructions. Geotechnical feature and mapping for subsurface in Metropolitan areas			✓	✓
			Method, Equipments uses for construction of Tunnel, Importance of Geology. Urban Water : Sources of water, Water logging in built-up areas, various uses of water. Waste water Management.			✓	✓
			Need for special purpose mapping for selection of waste disposal sites. GIS Application in Urban development.			✓	✓
		LAB WOK	Map Reading. Case studies of Urban flood problems. Case studies of urban planning.			✓	✓