



Vision

To provide highest levels of education through continuous revision and expansion of our educational programmes in order to produce well- trained ,competent, academic and professional geoscientists capable of responding to societal needs

Mission

- To develop in each student critical thinking, enthusiasm, initiative and the necessary skills to become lifelong students of Earth Sciences.
- Prepare students for professional positions in industry and government and for careers in academic research and teaching

PSO B.Sc. Geology

On completion of Course, the students will be able to

PSO 1 Acquire a solid base of knowledge in the science of geology as a whole as well as earth materials, earth history, sedimentation and stratigraphy, deformational processes and structural features, and geomorphic processes and landforms.

PSO 2 Demonstrate the ability to use Clinometer and Brunton compass, and toposheets in geological investigations.

PSO 3 Apply principles of mathematics, chemistry, and physics to geologic problems.

PSO 4 Develop proficiency in oral and written communication of geologic concepts.

Class :B.Sc. Part-I Geology

Paper I Course Outcome Paper-I Geodynamics & Geomorphology (BGL01)

On completion of Course, the students will be able to

CO 1 Discuss about basics of Geology, Solar system and Atmosphere

CO 2 Explain the agents of weathering and its products

CO 3 Outline about the concept of geomorphology and internal structure of the Earth

CO 4 Explain about the landforms developed by rivers, wind and glaciers

CO 5 Describe the geological work of ocean waves.

Paper II

Course Outcome Paper-II Mineralogy and Crystallography (BGL02)

On completion of Course, the students will be able to

CO 1 Identify the physical and chemical properties of the minerals



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- CO 2 Identify the Optical Characteristics of various Minerals
- CO 3 Classify the minerals in various silicate groups and explain their varieties
- CO 4 Explain about the basics of crystallography, various crystal forms, Crystallographic Axis and symmetry elements.
- CO 5 Describe various forms of normal classes of various crystal systems

Lab Course(BGL03)

On completion of Course, the students will be able to

- CO 1 Identify and describe various landforms in geomorphologic models.
- CO 2 Interpret topographical maps
- CO 3 Identify the physical and optical properties of common rock forming minerals
- CO 4 Identify the various crystal Systems and Symmetry through crystal models
- CO 5 Assess the miller Indices of the crystal models

Class : B.Sc. Part-II Geology

Paper I

Course Outcome Paper-I Petrology(BGL04)

On completion of Course, the students will be able to

- CO 1 Discuss about the formation of igneous rocks, texture and structures and classification of igneous rocks
- CO 2 Explain the formation of sedimentary rocks, texture and structures and classification of sedimentary rocks
- CO 3 Describe the formation of metamorphic rocks, texture and structures and classification of metamorphic rocks
- CO 4 Identify various types of igneous, sedimentary and metamorphic rocks
- CO 5 Explain the concept of metamorphic facies, ACF, AKF and AFM diagrams

Paper II

Course Outcome Paper-II Structural Geology(BGL05)

On completion of Course, the students will be able to

- CO 1 Explain about primary and secondary structures and fold
- CO 2 Recognize and classify the faults in the field and on geological map
- CO 3 Identify and classify Unconformities
- CO 4 Demonstrate the origin of foliation and lineation
- CO 5 Discuss about various types of Joints



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Course Outcome B.Sc. Part-II Geology Lab Course(BGL06)

On completion of Course, the students will be able to

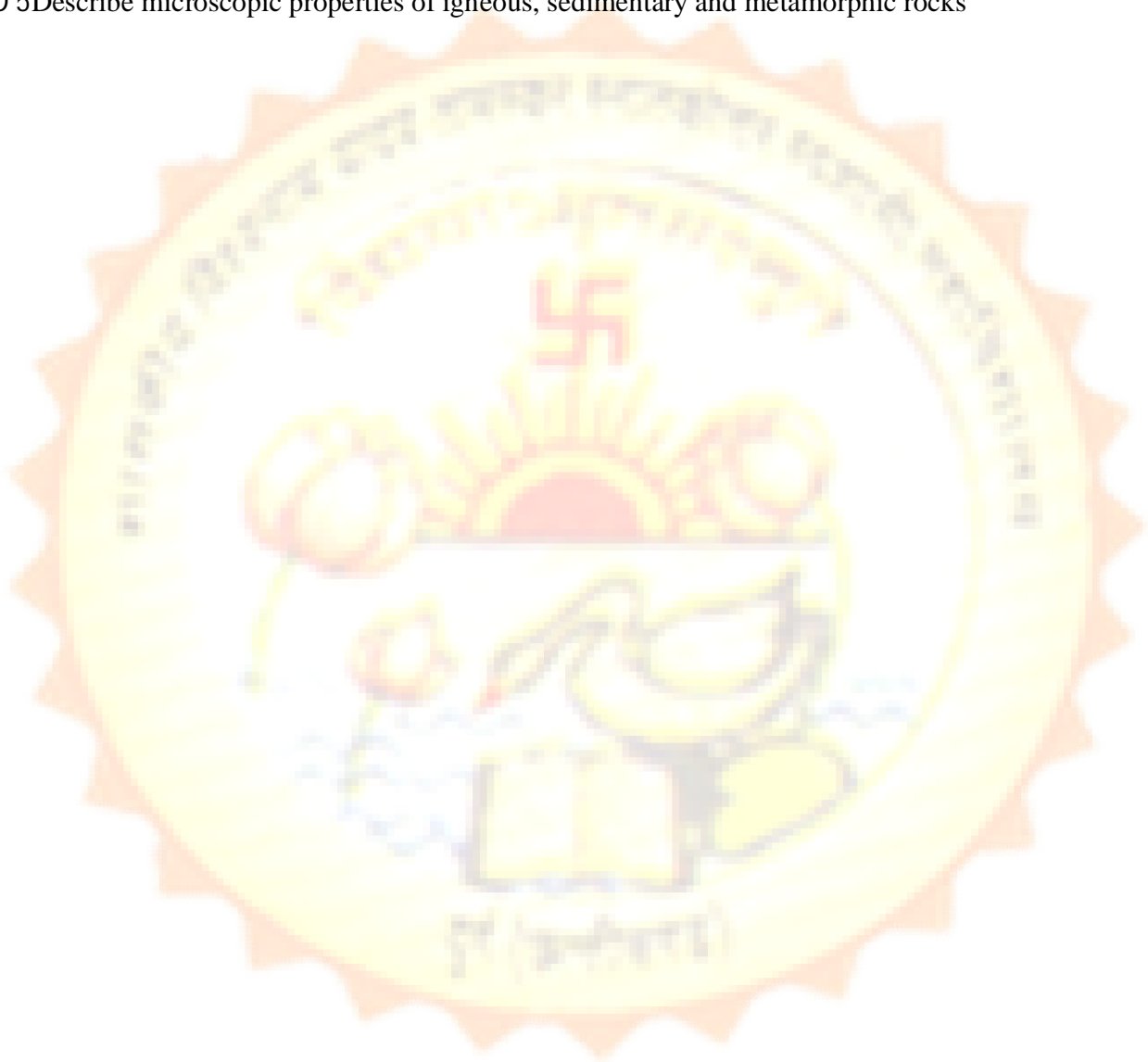
CO 1 Determine the strike and dip using Clinometer and Brunton compass

CO 2 Construct geological cross section from given geological map

CO 3 Identify the true and apparent dip through trigonometrical calculation and graphical method

CO 4 Identify igneous, sedimentary and metamorphic rocks in hand specimen

CO 5 Describe microscopic properties of igneous, sedimentary and metamorphic rocks





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Class : B.Sc. Part-III Geology

Course Outcome Paper I: Palaeontology & Stratigraphy (BGL07)

At the end of the course, the students will be able to

CO 1 Understand the principles of Stratigraphy and details of Geological Time scale

CO 2 Identify Indian stratigraphic systems of Archean, Dharwar, Cuddapah, Kumool, Vindhyan and Aravalli Supergroups

CO 3 Describe the Geological Time events of The Paleozoic, Gondwana, Triassic, Jurassic and Cretaceous and the Tertiary Group

CO 4 Understand the detailed significance of the Siwalik, Pleistocene, Holocene, Himalayas, and Eocene systems

CO 5 Describe morphology, geological distribution and evolution of Brachiopods, Lamellibranches, Trilobites, Gastropods, Graptolites and Echinoids.

Course Outcome Paper II: Earth Resources & Applied Geology(BGL08)

On completion of course, the students will be able to

CO 1 Understand the basics of Environmental Geology and Natural Disaster Management

CO 2 Describe about the basic principles of Geophysics and its application.

CO 3 Explain the various geological methods of Mineral exploration

CO 4 Explain about the formation of mineral deposits

CO 5 Discuss the origin and occurrence of coal and petroleum

Course Outcome B.Sc. Part-III Geology Lab Course (BGL09)

On completion of course, the students will be able to

CO 1 Identify ore forming minerals in hand specimen

CO 2 Demarcate ore deposits and economic mineral deposits in Outline map of India

CO 3 Estimate the ore reserves from the given data

CO 4 Identify various invertebrate and plant fossils on the basis of their morphological characters

CO 5 Demarcate various stratigraphic horizons in outline map of India



PROGRAMME SPECIFIC OUTCOME (PSO) M.Sc. Geology

PSOs are Statements that describe what the graduates of a specific educational Programme should be able to do.

PSO 1: Apply the knowledge of Geology in the multidisciplinary domains.

PSO 2: Solve the problems in the field of geology with an understanding of the societal, legal and cultural impacts of the solution

PSO3: Understand the impact of Geology in societal and environmental contexts, and describe the knowledge of, and need for sustainable development

PSO4: Communicate effectively with the scientific community and with the society such that, being able to comprehend, write useful reports and make clear documentation, make effective presentations.

M.Sc. - I Semester Geology

Course Outcome Paper I: Geomorphology (MGL 101)

On completion of Course, the students will be able to

CO 1. Describe the fundamental concepts of Geomorphology, Weathering, Soil processes and Karst Topography, Morphometric analysis.

CO 2. Identify the landforms formed by the tectonic activities and the geological work done by a river and glacial processes.

CO 3. Describe the coastal process along the shoreline on the surface of the earth and the geological work done by the wind.

CO4. Explain the volcanic processes acting on the surface of the earth and its resultant surface morphology;

CO5. Apply the principles of Geomorphology in various studies.

Course Outcome Paper II: Structural Geology and Tectonics (MGL 102)

On completion of Course, the students will be able to

CO1. Understand the concept of stress forces acting on the earth and its resultant structural changes.

CO2. Identify and distinguish various geological structures on photographs, geological maps and in field.

CO3. Illustrate the planar and linear fabrics in deformed rock.

CO4. Summarize the theory of plate tectonics and describe how the outer part of the earth broken into large fragments (plates) that are always in motion relative to each other.

CO5. Explain the evolution of continental and oceanic crust and tectonics of Precambrian orogenic belts of India.



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Course Outcome Paper III: Mineralogy and Crystallography (MGL 103)

At the end of the course, the students will be able to

- CO1. Identify the rock-forming minerals
- CO2. Explain the optical mineralogical characteristics of various rock forming silicates.
- CO3. Discuss the symmetry characteristics and forms of various crystal systems.
- CO4. Describe the characteristics of Nesosilicates, sorosilicate and Ring Silicates.
- CO5. Explain the characteristics of Inosilicates, Phyllosilicates, Tectosilicates.

Course Outcome Paper IV: Geochemistry, Instrumentation and Analytical Techniques (MGL 104)

At the end of the course, the students will be able to

- CO1. Describe the chemical composition characteristics of the Earth,
- CO2. Discuss the geochemical classification of elements, Major, minor and trace and elements
- CO3. Explain element partitioning in minerals and rocks.
- CO4. Explain instrumentation and analytical techniques used in geochemical analysis.
- CO5. Interpret results of water analysis with the help of various diagrams

Course Outcome Lab Course - I (MGLP01)

At the end of the course, the students will be able to

- CO1. Identify various landforms.
- CO2. Distinguish various types of drainage patterns
- CO3. Do calculations of morphometric analysis.
- CO4. Demonstrate the skill of preparation of geological cross sections and interpretations of geological maps, Completion of outcrops.
- CO5. Identify structures present in natural rock specimens and models.

Course Outcome Lab Course – II (MGLP02)

At the end of the course, the students will be able to

- CO1. Identify rock forming minerals in hand specimen and thin section
- CO2. Determine pleochroic scheme in minerals,
- CO3. Estimate anorthite content in plagioclase,
- CO4. Determine order of interference colour in common minerals.
- CO5. Interpret of results of water analysis with the help of various diagrams.



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M.Sc. - II Semester Geology

Course Outcome Paper- I: Igneous Petrology(MGL 201)

At the end of the course, the students will be able to

CO1.Explain principles concepts of petrology, petrography & petrogenesis.

CO2. Identify various forms, structures and textures of igneous rocks. CO3.Classify the igneous rocks and describe their megascopic and microscopic characters.

CO4. Describe the evolution

of magma

CO5. Summarize

the generation of magma with reference to plate tectonics

Course Outcome Paper- II: Sedimentology(MGL 202)

At the end of the course, the students will be able to

CO1.Evaluate the role of various sedimentary environments in the formation of sedimentary rocks.

CO2.Identify various forms, structures and textures of sedimentary rocks.

CO3.Classify the sedimentary rocks and describe their megascopic and microscopic

characters.CO4.Summarize Field and Laboratory techniques in Sedimentology

CO5.Explain application of trace element, rare earth element and isotope geochemistry to

Sedimentological problems

Course Outcome Paper- III: Metamorphic Petrology(MGL 203)

At the end of the course, the students will be able to

CO1. Identify various forms, structures and textures of metamorphic rocks.

CO2.Classify the metamorphic rocks and describe their megascopic and microscopic

characters.CO3.Demonstrate the metamorphic mineral assemblages in ACF, AKF, and AFM, diagrams

CO4. Explain paired metamorphic belts with reference to Plate TectonicsCO5. Describe facies of low

pressures, medium to high pressure and very high pressure

Course Outcome Paper IV: Paleobiology and Stratigraphy(MGL 204)

At the end of the course, the students will be able to

CO1. Evaluate the principles of Stratigraphy and details of Geological Time scale

CO2. Identify Indian stratigraphic systems of Archean, Dharwar, Cuddapah, Vindhyan and Aravalli Supergroups

CO3. Describe the detailed insight into the Geological Time events of The Paleozoic, Gondwana, Triassic, Jurassic and Cretaceous and The Tertiary Group

CO4.Assess the detailed significance of the Siwalik, Pleistocene, Holocene, Himalayas, and Eocene systems.

CO5.Analyze the age and boundary problems of various ages.



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Course Outcome Lab Course – I (MGLP03)

At the end of the course, the students will be able to

- CO1. Identify various forms, structures and textures of igneous rocks.
- CO2. Identify various forms, structures and textures of sedimentary rocks.
- CO3. Identify various forms, structures and textures of metamorphic rocks.
- CO 4. Draw variation diagrams.
- CO 5. Construct ACF, AKF and AFM diagrams.

Course Outcome Lab Course – II (MGLP04)

At the end of the course, the students will be able to

- CO1. Identify primary, secondary and biogenic sedimentary structures in hand specimens, field photographs and outcrops.
- CO2. Prepare rose diagram from paleocurrent data.
- CO3. Calculate statistical parameters related to Grain size analysis
- CO4. Identify important fossils from Indian stratigraphic horizons.
- CO5. Plot stratigraphic horizons in the outline map of India.

M.Sc. - III Semester Geology

Course Outcome Paper I: Environmental Geology (MGL 301)

At the end of the course, the students will be able to

- CO1. Assess the basics of Environmental Geology and Natural Disaster Management
- CO2. Explain the concept of Natural Disaster Management
- CO3. Analyze the risk and mitigation of hazards.
- CO4. Assess the impact of human activities on soil, groundwater and other natural resources
- CO5. Understand environmental policies of the Government for air and water pollution.

Course Outcome Paper II: Economic Geology (MGL 302)

At the end of the course, the students will be able to

- CO1. Explain mode of occurrence of ore bodies and ore textures
- CO2. Describe ores of various affiliations
- CO3. Define rank, grade and type of coal
- CO4. Describe various ore deposits of India
- CO5. Explain mode of occurrence and distribution of coal, petroleum and radioactive minerals in India

Course Outcome Paper III: Mineral Exploration (MGL 303)

At the end of the course, the students will be able to

- CO1. Describe Prospecting & Exploration



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CO2. Describe tools and techniques of exploration such as mapping, sampling, drilling
CO3. Estimate grade and tonnage of ore
CO4. Explain principles of geophysical methods of prospecting
CO5. Interpret borehole log data

Course Outcome Paper IV: Hydrogeology (MGL 304)

At the end of the course, the students will be able to

- CO1. Explain the origin and occurrence, distribution and types of groundwater
- CO2. Describe the hydrologic properties of rocks, Darcy law, Pumping test and quality characteristics of groundwater
- CO3. Understand about Groundwater Basins, Recharge and Management studies
- CO4. Explain the water table fluctuation.
- CO5: Analyze the problems related to porosity and specific yield and retention.

Course Outcome Lab Course – I (MGLP06)

At the end of the course, the students will be able to

- CO1. Demarcate the seismic zones in outline map of India
- CO2. Identify different ores in hand specimen and their associations.
- CO3. Evaluate environmental impact assessment
- CO4. Estimate ore reserves and coal reserves from given data.
- CO5. Describe mineralogical and textural characteristics of common ore minerals under ore microscope.

Course Outcome Lab Course – II (MGLP07)

- CO1. Solve problems based on geophysical survey data.
- CO2. Delineate hydrological boundaries on water table contour maps
- CO3. Evaluate aquifer parameters using pumping test data.
- CO4. Analyze Hydrographs.
- CO5. Analyze quality of water using USGS and Piper's diagram



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M.Sc. - IV Semester Geology

Course Outcome Paper I: Photogeology and Remote Sensing (MGL 401)

At the end of the course, the students will be able to

- CO1. Explain basic principles of photogeology and aerial photography
- CO2. Understand basic concepts of electromagnetic radiation, its interaction with the earth's surface and atmosphere
- CO3. Understand resolution properties to interpret, process and evaluate remotely sensed images
- CO4. Explain about the GIS principles and applications
- CO5. Apply basic analytical tool in GIS for the preparation of thematic maps
- 6. Identify the satellite data for various applications

Course Outcome Paper II: Engineering Geology and Mineral Beneficiation (MGL 402)

At the end of the course, the students will be able to

- CO1. Explain role of engineering geology in civil construction and mining industry.
- CO2. Describe various stages of engineering geological investigations for civil engineering projects.
- CO3. Describe engineering properties of rocks and physical characters of building stones.
- CO4. Analyze influence of geological conditions on various engineering structures.
- CO5. Explain techniques of mineral beneficiation

Course Outcome Paper III: Mineral Resource Development and Mining Geology (MGL 403)

At the end of the course, the students will be able to

- CO1. Understand terms used in mining
- CO2. Describe the methods of open cast and underground mining
- CO3. Describe general concepts of RP (Reconnaissance Permit), PL (Prospecting License) and ML (Mining Lease)
- CO4. Understand the components of mining plans
- CO5. Explain United Nations framework classification (UNFC classification) of mineral resource/reserve.

Course Outcome Paper IV (Elective Paper) : Energy Resources (MGL 404)

At the end of the course, the students will be able to

CO 1. Understand salient features of different sources of energy,

- CO 2. Describe main elements of utilization of renewable sources of energy.
- CO 3. Explain advantages and disadvantages of different sources of energy
- CO 4. Undertake simple analysis of energy potential of sources of energy,
- CO 5. Explain the impact of exploitation of various sources of energy



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Course Outcome Lab Course – I (MGLP08)

At the end of the course, the students will be able to

- CO1. Identify terrain elements present on aerial photographs and satellite imageries
- CO2. Visually interpret satellite imageries.
- CO3. Apply the knowledge of GIS software in geological studies
- CO4. Apply the knowledge of Global Positioning System device in geological studies
- CO5. Identify the satellite data for various geological applications

Course Outcome Lab Course – II (MGLP09)

At the end of the course, the students will be able to

- CO1. Classify common rocks with reference to their utility in engineering projects
- CO2. Construct maps and models of important engineering structures such as dam sites and tunnels
- CO3. Interpret geological maps for suitability of construction of engineering structures
- CO4. Illustrate open cast and underground mining methods through diagrams and models
- CO5. Solve the problems based on resistivity survey data




Principal
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