

**DEPARTMENT OF GEOLOGY**  
**GOVT. DIGVIJAY PG AUTONOMOUS COLLEGE, RJN (C.G.)**  
**B.Sc. Geology 2021 – 2022**



Approved syllabus for B.Sc. GEOLOGY by the members of Board of Studies for the  
 Session 2021 -22

The syllabus with the paper combinations is as under

**B.Sc.I Geology-**

Paper I: Geodynamics & Geomorphology Course code :- <b>BGL01</b>	Paper II: Mineralogy & Crystallography Course code :- <b>BGL02</b>
Practical Course code :- <b>BGLP01</b>	

**B.Sc. II Geology-**

Paper I: Petrology Course code :- <b>BGL03</b>	Paper II: Structural Geology Course code : <b>BGL04</b>
Practical Course code :- <b>BGLP02</b>	

**B.Sc. III Geology:-**

Paper I: Earth Processes and Resources Course code :- <b>BGL05</b>	Paper II: Natural Environment, Remote sensing, Groundwater and Mineral Exploration Course code :- <b>BGL03</b>
Practical: Course code :- <b>BGLP03</b>	

The syllabus for B.Sc.-I Geology is hereby approved for the session 2021 -22.

**Program Outcomes - B.Sc. Geology**

The student graduating with the Degree B.Sc. Geology will be able to:

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
2. Understand the geologic time scale and place important geologic events in a temporal framework
3. Demonstrate the ability to use Clinometers and Brunton compass, and images in geological investigations
4. Understand the pathways and influence of water and other fluids at Earth's surface and in the subsurface
5. Interpret topographic maps and terrain models and create profiles
6. Interpret geologic maps and construct cross sections from them
7. Distinguish between various structural features and determine the types of stress responsible for their formation
8. Describe and interpret types of surficial deposits and landforms
9. Apply principles of mathematics, chemistry, and physics to geologic problems
10. Develop proficiency in oral and written communication of geologic concepts.

*K.P.S.*  
Chairperson/H.O.D

Subject Expert

Subject Expert

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Subject Expert

Senior Professor of Science Faculty

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Departmental members

Alumnus

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**DEPARTMENT OF GEOLOGY**  
**GOVT. DIGVIJAY PG AUTONOMOUS COLLEGE, RJN (C.G.)**  
**B.Sc. Geology 2021 – 2022**

**Syllabus and Marking Scheme for B.Sc. Part – I Geology**

Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I	Geodynamics & Geomorphology	50	17
II	Mineralogy & Crystallography	50	17
	Practical	50	17
	<b>Total</b>	<b>150</b>	

02 Theory papers	-	100
01 Practical	-	50
<b>Total Marks</b>	-	<b>150</b>

**Course Outcome course code: - BGL01, Paper-I Geodynamics & Geomorphology**

On completion of Course, the students will be able to

1. Discuss about basics of Geology, Solar system and Atmosphere
2. Evaluate the Theories of Origin of Earth and Age of the Earth
3. Demonstrate the Geological time scale and internal structure of the Earth
4. Explain the agents of weathering and its products
5. Discuss the theory of plate tectonics and demonstrate the causes of Earthquakes and volcanoes.
6. Outline about the concept of geomorphology and geological work of wind
7. Demonstrate the landforms created by river and lakes.
8. Evaluate the landforms created by Groundwater and describe about drainage pattern
9. Explain about the landforms developed by glaciers
10. Describe the geological work of sea.

*KPS*  
 Chairman H.O.D

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Senior Professor of Science Faculty

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**B.Sc. Geology 2021 – 2022**

**Question Paper Format and Distribution of Marks for Under Graduate Examination**

1. The question paper for UG Classes is to be divided into three Sections - A, B & C.
2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)
3. Section B shall contain short answer type questions with the limit of 150 words.
4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.
5. The scheme of marks should be as follows :

Question Type	MM 50 (Marks X No.of Q.)
A (Very short Ans.)	1x10 = 10
B (Short Ans.)	3x5 = 15
C (Long Ans.)	5x5 = 25

6. The half yearly internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

**Course Outcome Paper-II Mineralogy and Crystallography**

On completion of Course, the students will be able to

1. Identify the physical and chemical properties of the minerals
2. Explain about verities of minerals in Quartz and Feldspar Groups
3. Demonstrate minerals in Pyroxene Groups.
4. Classify the minerals in Amphibole, Olivine, Mica, Garnet minerals.
5. Identify the Optical Characteristics of various Minerals.
6. Explain about the basics of crystallography, various crystal forms, Crystallographic Axis and symmetry elements
7. Differentiate Isometric and Tetragonal crystal forms.
8. Identify and describe the Hexagonal, rhombohedral and mineral forms
9. Identify the Orthorhombic, Monoclinic and triclinic crystal forms.
10. Describe about Twinning in crystals.

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 Chairperson H.O.D

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**Course Outcome B.Sc. Part-I Geology Lab Course**

On completion of Course, the students will be able to

1. Identify the megascopic properties of Quartz and Feldspar group of minerals
2. Outline the megascopic properties of pyroxene group of minerals
3. Demonstrate the megascopic properties of Amphibole group of minerals
4. Describe the megascopic properties of olivine and Mica group of Minerals.
5. Describe about Microscopic identification of minerals.
6. Identify the various crystal Systems and Symmetry through crystal models
7. Assess the miller Indices of the crystal models
8. Identify Twining in crystals.
9. Identify and describe various landforms in geomorphologic models.
10. Interpret topographical maps

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 Chairman H.O.D

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**B.Sc. Geology 2021 – 2022**



Approved syllabus for B.Sc. GEOLOGY by the members of Board of Studies for the  
 Session 2021 -22

The syllabus with the paper combinations is as under

**B.Sc. I Geology-**

Paper I: Geodynamics & Geomorphology Course code :- <b>BGL01</b>	Paper II: Mineralogy & Crystallography Course code :- <b>BGL02</b>
Practical Course code :- <b>BGLP01</b>	

**B.Sc. II Geology-**

Paper I: Petrology Course code :- <b>BGL03</b>	Paper II: Structural Geology Course code : <b>BGL04</b>
Practical Course code :- <b>BGLP02</b>	

**B.Sc. III Geology:-**

Paper I: Earth Processes and Resources Course code :- <b>BGL05</b>	Paper II: Natural Environment, Remote sensing, Groundwater and Mineral Exploration Course code :- <b>BGL03</b>
Practical: Course code :- <b>BGLP03</b>	

The syllabus for B.Sc.- II Geology is hereby approved for the session 2021 -22.

**Program Outcomes - B.Sc. Geology**

The student graduating with the Degree B.Sc. Geology will be able to:

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
2. Understand the geologic time scale and place important geologic events in a temporal framework
3. Demonstrate the ability to use Clinometers and Brunton compass, and images in geological investigations
4. Understand the pathways and influence of water and other fluids at Earth's surface and in the subsurface
5. Interpret topographic maps and terrain models and create profiles
6. Interpret geologic maps and construct cross sections from them
7. Distinguish between various structural features and determine the types of stress responsible for their formation
8. Describe and interpret types of surficial deposits and landforms
9. Apply principles of mathematics, chemistry, and physics to geologic problems
10. Develop proficiency in oral and written communication of geologic concepts.

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 Chairperson/H.O.D

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**B.Sc. Geology 2021 – 2022**



**Syllabus and Marking Scheme for B.Sc. Part – II Geology**


Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I	Petrology	50	17
II	Structural Geology	50	17
	Practical	50	17
	<b>Total</b>	<b>150</b>	

02 Theory papers	-	100
01 Practical	-	50
<b>Total Marks</b>	-	<b>150</b>

**Course Outcome Paper-I Petrology**

On completion of Course, the students should be able to

1. Discuss about the formation of igneous rocks, their texture and structures
2. Explain about forms and classification of igneous rocks
3. Identify, describe and classify sedimentary rocks using hand specimens
4. Describe the formation of sedimentary rocks, their textures and structures
5. Explain about the formation of metamorphic rocks, their texture and structure
6. Identify and classify various types of metamorphic rocks.
7. Explain the concept of metamorphic facies, ACF, AKF and AFM diagrams

  
 Chairperson - H.O.D.

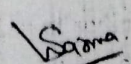
Subject Expert

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Senior Professor of Science Faculty

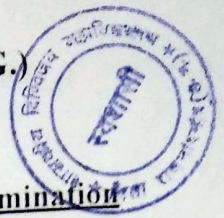
  
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**B.Sc. Geology 2021 – 2022**



**Question Paper Format and Distribution of Marks for Under Graduate Examination**

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6. The half yearly internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

**Course Outcome Paper-II Structural Geology**

On completion of Course, the students will be able to

1. Explain about parts of fold and classify various folds
2. Recognize and classify the faults in the field and on geological map
3. Identify and classify Unconformities
4. Discuss about various types of Joints
5. Demonstrate the origin of foliation and lineation
6. Identify the top and bottom of rock beds in a series of rocks

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Chairperson HOD

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**B.Sc. Geology 2021 – 2022**



**Question Paper Format and Distribution of Marks for Under Graduate Examination**

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2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)
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Question Type	MM 50 (Marks X No.of Q.)
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C (Long Ans.)	5x5 = 25

6. The half yearly internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

**Course Outcome B.Sc. Part-II Geology Lab Course**

On completion of this course, the students will be able to

1. Analyze the contour maps and assess the strike and dip using Clinometers and Brunton compass
2. Compute the thickness of the outcrops
3. Identify the true and apparent dip through trigonometrical calculation and graphical method
4. Construct geological cross section from given geological map
5. Identify igneous, sedimentary and metamorphic rocks in hand specimen
6. Describe microscopic properties of igneous, sedimentary and metamorphic rocks

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Chairperson H.O.D

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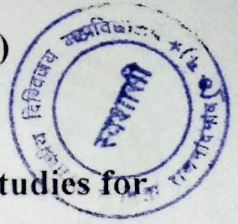
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DEPARTMENT OF GEOLOGY  
GOVT. DIGVIJAY PG AUTONOMOUS COLLEGE, RJN (C.G.)

B.Sc. – III Geology 2021 – 2022



Approved syllabus for B.Sc.-III GEOLOGY by the members of Board of Studies for  
the Session 2021 -22

The syllabus with the paper combinations is as under

**B.Sc.I Geology-**

Paper I: Geodynamics & Geomorphology Course code :- BGL01	Paper II: Mineralogy & Crystallography Course code :- BGL02
Practical Course code :- BGLP01	

**B.Sc. II Geology-**

Paper I: Petrology Course code :- BGL03	Paper II: Structural Geology Course code : BGL04
Practical Course code :- BGLP02	

**B.Sc. III Geology:-**


Paper I: Palaeontology & Stratigraphy Course code :- BGL05	Paper II: Earth Resources & Applied Geology Course code :- BGL06
Practical: Course code :- BGLP03	

The syllabus for B.Sc.- III Geology is hereby approved for the session 2021 -22.

**Program Outcomes - B.Sc. Geology**

The student graduating with the Degree B.Sc. Geology will be able to:

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
2. Understand the geologic time scale and place important geologic events in a temporal framework
3. Demonstrate the ability to use Clinometers and Brunton compass, and images in geological investigations
4. Understand the pathways and influence of water and other fluids at Earth's surface and in the subsurface
5. Interpret topographic maps and terrain models and create profiles
6. Interpret geologic maps and construct cross sections from them
7. Distinguish between various structural features and determine the types of stress responsible for their formation
8. Describe and interpret types of surficial deposits and landforms
9. Apply principles of mathematics, chemistry, and physics to geologic problems
10. Develop proficiency in oral and written communication of geologic concepts.

  
Chairperson H.O.D

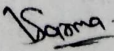
Subject Expert

Subject Expert

Subject Expert

Subject Expert

Senior Professor of Science Faculty

  
Departmental member

Alumnus

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**DEPARTMENT OF GEOLOGY**  
**GOVT. DIGVIJAY PG AUTONOMOUS COLLEGE, RJN (C.G.)**  
**B.Sc. – III Geology 2021 – 2022**

**Syllabus and Marking Scheme for B.Sc. Part – III Geology**


Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I	Palaeontology & Stratigraphy	50	17
II	Earth Resources & Applied Geology	50	17
	Practical	50	17
02	Total	150	

Theory papers - 100  
 01 Practical - 50  
 Total Marks - 150

**Course Outcome Paper I: Palaeontology & Stratigraphy**

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

1. Understand the principles of Stratigraphy and details of Geological Time scale
2. Identify Indian stratigraphic systems of Archean, Dharwar, Cuddapah, Kurnool, Vindhyan and Aravalli Supergroups
3. Describe the Geological Time events of The Paleozoic, Gondwana, Triassic, Jurassic and Cretaceous and the Tertiary Group
4. Understand the detailed significance of the Siwalik, Pleistocene, Holocene, Himalayas, and Eocene systems.
5. Analyze the age and boundary problems of various ages.
6. Describe morphology, geological distribution and evolution of Brachiopods, Lamellibranches, Trilobites, Gastropods, Graptolites and Echinoids.

  
 Chairperson H.O.D

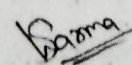
Subject Expert

Subject Expert

Subject Expert

Subject Expert

Senior Professor of Science Faculty

  
 Departmental members

Alumnus

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B.Sc. – III Geology 2021 – 2022



Course Outcome Paper II: Earth Resources & Applied Geology

On completion of Course, the students will be able to

1. Understand the basics of Environmental Geology and Natural Disaster Management
2. Evaluate the impact of human activities on soil, groundwater and other natural resources
3. Describe about the basic principles of Geophysics and its application.
4. Explain the field procedure and interpretation of geophysical data for groundwater exploration.
5. Explain the various geological methods of Mineral exploration
6. Describe geophysical methods of mineral exploration
7. Understand the methods of groundwater exploration
8. Outline the basics of engineering geology and its applications.
9. Understand the occurrence and availability of groundwater resources and the role of the hydrologic cycle
10. Explain fundamentals of Aerial photographs and Satellite Imageries and application of remote sensing in geological studies.
11. Explain about the formation of mineral deposits
12. Demonstrate the distribution of mineral resources.
13. Discuss the Classification of the mineral deposits
14. Outline the various mineral resources of India
15. Explain about the mineral policy of India.
16. Understand about the origin, occurrence and properties of Coal
17. Discuss the age and occurrences of the coal
18. Explain about the petrography of Coal
19. Outline the origin and occurrences of the Petroleum

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Chairperson H.O.D

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Senior Professor of Science Faculty

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Departmental members

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**DEPARTMENT OF GEOLOGY**  
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**B.Sc. – III Geology 2021 – 2022**

**B.Sc. Part – III PRACTICAL**

**COURSE CODE: - BGLP03**



**Course Outcome B.Sc. Part-III Geology Lab Course**

On completion of Course, the students will be able

1. Identify ore forming minerals in hand specimen.
2. Demarcate ore deposits and economic mineral deposits in Outline map of India.
3. Estimate the ore reserves from the given data.
4. Interpret aerial photographs with the help of stereoscope.
5. Visually interpret satellite Imageries.
6. Construct and interpret water table maps on the basis of given data
7. Identify various invertebrate and plant fossils on the basis of their morphological characters

**Practical Exercises -**

- (1) Study of important metallic and nonmetallic minerals on the basis of physical & optical properties.
- (2) Distribution of important metallic and nonmetallic deposits within outline map of India.
- (3) Macroscopic studies of coal & its varieties.
- (4) Exercises related to mineral exploration; Reserve calculation, Tonnage factor calculation, Exercises related to drilling.
- (5) Study of Aerial photographs with the help of stereoscope.
- (6) Study of satellite imageries.
- (7) Study of hydrologic properties of rocks. Preparation of hydrogeological maps.
- (8) Geological excursion for ten days.
- (9) Identification of various invertebrate and plant fossils on the basis of their morphological characters.
- (10) Plotting of various localities exhibiting rocks belonging to various ages on the outline map of India.

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