


Scheme of Examination
B.Sc.
Geology

Year	Course Code	Subject Name	Theory/ Practical	Total Credit	Total Marks	
First Year	GEOL- 1 T	Geodynamics and Geomorphology	Theory	4	50	17
	GEOL- 2 T	Mineralogy and Crystallography	Theory	4	50	17
	GEOL-1 P	Geodynamics and Geomorphology Mineralogy and Crystallography	Practical	2	50	17
Second Year	GEOL- 3 T	Petrology	Theory	4	50	17
	GEOL - 4 T	Structural Geology	Theory	4	50	17
	GEOL – 2P	Petrology Structural Geology	Practical	2	50	17
Third Year	GEOL- 5 T	Palaeontology and Stratigraphy	Theory	4	50	17
	GEOL – 6T	Earth Resources and Applied Geology	Theory	4	50	17
	GEOL – 3P	Palaeontology and Stratigraphy Earth Resources and Applied Geology	Practical	2	50	17

Note : There shall be four extra credits in all the years of under graduation for internship/ apprenticeship/ skill based course. The certificate of extra credits would be provided by the concern university and is not mandatory.


(MAHFOOZ ARAF)

Part A			
Introduction			
Program: Degree Course		Class: B.Sc. III Year	Year: 2022
		Session: 2024-2025	
S.No.			
1	Course Code	GEOL - 3P	
	Course Title	Palaeontology, Stratigraphy, Earth Resources & Applied Geology (Paper Practical)	
	Course Type	Practical	
	Pre-requisite (if any)	This practical course is related to theory course Geology Paper I & II.	
	Course Learning Outcomes (CLO)	On completion of course, the students will be able - <ul style="list-style-type: none"> • Identify ore forming minerals in hand specimen. • Demarcate ore deposits and economic mineral deposits in Outline map of India. • Estimate the ore reserves from the given data. Interpret aerial photographs with the help of stereoscope. • Visually interpret satellite Imageries. • Construct and interpret water table maps on the basis of given data. • Identify various invertebrate and plant fossils on the basis of their morphological characters. 	
	Credit Value	Practical : 2	
	Total Marks	Maximum Marks: 50	Minimum Passing Marks : 17

Part B1	
Content of the Course	
Palaeontology & Stratigraphy	
Topics	No. of Periods
Study of morphology of fossils belonging to various phyla.	3
Study of Important plant fossils	3
Representation of Litho units & Stratigraphic Units in outline map of India.	3
Sketching of physiographic division of India.	3
Palaeoecological studies of plant Fossils	3

Part B2	
Content of the Course	
Earth Resources & Applied Geology	
Topics	No. of Periods
Study of important metallic/nonmetallic minerals on the basis of physical & optical properties & Macroscopic studies of coal & its varieties.	3
Distribution of main metallic/nonmetallic deposits within outline map of India.	3
Study of hydrologic properties of rocks, Preparation of hydrological maps.	3
Exercises related with mineral exploration; Reserve calculation, Tonnage factor calculation, Exercises related with drilling.	3
Study of Aerial photographs with the help of stereoscopes. & Study of satellite imageries.	3
Field work of seven days is compulsory for the students.	

Part C

Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings

- (1) जीवाश्मविज्ञान के सिद्धांत—डॉ.अंबिकाप्रसादअग्रवाल
- (2) जीवाश्मविज्ञान—डॉ. आर.पी. मिश्रा
- (3) अकशेरुकी एवंकशेरुकीय जीवाश्मविज्ञान—डॉ. दीपकराजतिवारी
- (4) भारतवर्षकाभूविज्ञान—डॉ.अंबिकाप्रसादअग्रवाल
- (5) प्रायोगिकभूविज्ञान भाग-3—डॉ. गुप्ता, पुनवटकर, रघुवंशी
- (6) Invertebrate Palaeontology- H.Woods.
- (7) Introduction to Palaentology- A.N. Davis.
- (8) An Introduction to Invertebrate Palaeontology- P.G. Jain & M.S.Anantharaman
- (9) Historical Geology of India- Ravindra Kumar
- (10) Geology of India- R.Vidhyanathan&M.Ramkrishna (GSI Publication)
- (11) Geology of India & Burma- M.S. Krishnan.
- (12) आर्थिकभूविज्ञान—कृष्णगोपालव्यास
- (13) आर्थिक एवंव्यावहारिकभूविज्ञान—आर.पी. मांजरेकर
- (14) भौमजलविज्ञान— एल.के. रिछारिया
- (15) प्रारंभिक खनिकी—बी.के. सिंह
- (16) प्रायोगिकभूविज्ञान भाग-3—गुप्ता, पुनवटकर एवंरघुवंशी
- (17) Economic mineral deposits of India- Umeshwar Prasad.
- (18) Economic mineral deposits- A.Bateman
- (19) Ore-deposit of India- Gokhale&Rao
- (20) India's Mineral Resource- S. Krishnaswami
- (21) Principle of Engineering Geology &Geotechniques- Krynine& Judd.
- (22) Ground-water Hydrology- D.K. Todd
- (23) Courses in mining Geology- R.N.P. Arogyaswami
- (24) Principle & Application of photogeology- S.N. Pandey.
- (25) Ground water- Assessment, Development & Management- K.R. Karanth
- (26) Geophysical methods in Geology- P.V. Sharma.
- (27) Environmental Geology- K.S. Valdiya (1987)

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3. <https://egyankosh.ac.in/>
4. <https://sites.google.com/ignou.ac.in/bscgeology>
5. SWAYAM – <https://swayam.gov.in/explorer?searchtext>
6. National digital library – <https://ndl.iitkgp.ac.in>
7. e-PG pathshala (MHRD) portal, <https://epgp.inflibnet .ac.in>

PartD AssessmentandEvaluation		
SuggestedContinuousEvaluationMethods: MaximumMarks:50 ContinuousComprehensiveEvaluation(CCE):NA UniversityExam(UE): 50 marks		
InternalAssessment: ContinuousComprehensive Evaluation(CCE)	Class Test Assignment/Presentation	NA



Declaration

This is to certify that the syllabus is framed by the Central Board of Studies in Geology as per the guidelines of the Department of Higher Education, Chhattisgarh. This meeting was held at AtalBihariBajpai University Bilaspur on 3rd June 2022.

S.No	Name	College	Designation	Signature
1	Prof. MahfoozArif	Govt.E.RaghvendraRao Science college, Bilaspur(C.G.)	Chairman	
2	Prof.Ramesh Joshi	Govt.Kaktiya PG College, Jagdarpur, Bastar (C.G.)	Member	
3	Prof.Pradeep Singh Gour	BhanuPratapDeoGovt.PG.C ollege, Kanker(C.G.)	Member	
4	Dr.Shailendra Singh Bhadauria	Govt.Nagarjuna Science College, Raipur (C.G.)	Member	
5	Dr.S.D.Deshmukh	Govt.V.Y.T PG Autonomous College,Durg (C.G.)	Member	
6	Prof.AmitanshuShekharJ ha	Govt.Kaktiya PG College, Jagdarpur, Bastar (C.G.)	Member	
7	Prof.SunilA.K.Kerketta	Rajiv Gandhi Govt.PG College, Ambikapur (C.G.)	Member	Present online
8	Dr. NinadBodhankar	Prof. & Head Department of Geology & WRM SOS in Geology, Pt. RS University Raipur	Member	Present online
9	Dr. SandeepVansutre	Govt.Nagarjuna Science College, Raipur (C.G.)	Member	Present online
10	Pro A.K.Sandilaya	Prof., Department of Applied Geology, Dr. HS Gour University Sagar, M.P.	Member	Present online
11	Dr. BhargavaAyangar	Department of Applied Geology,NIT Raipur	Member	Present online

Part A Introduction				
Program: DegreeCourse		Class: B.Sc. III Year	Year: 2022	Session: 2024-2025
S.No.				
1	Course Code	GEOL- 5T		
2	Course Title	(Palaeontology& Stratigraphy) Paper I		
3	Course Type	Theory		
4	Pre-requisite- (if any)	To study in this class, students must have passed B.Sc. Part 2 class with Geology subject.		
5	Course Learning Outcomes (CLO)	<p>At the end of the course, the students will be able to –</p> <ul style="list-style-type: none"> • Understand modes of fossilization and uses of fossils. • Identify Gondwana plant fossils. • Describe morphology, geological distribution of Brachiopods, Lamellibranches, • Describe morphology, geological distribution of Trilobites, Gastropods, Graptolites and Echinoids. • Understand the principles of Stratigraphy and details of Geological Time scale • Understand Indian stratigraphic systems of Archean, Dharwar, Cuddapah, and Vindhyan Supergroups • Describe the Geological Time events of The Paleozoic, Gondwana, Triassic, Jurassic and Cretaceous and the Tertiary rocks 		
6	Credit Value	04		
7	Total Marks	Maximum Marks: 50	Min. Marks 17	

Part B Content of the Course		
Total Periods: 60		
Unit	Topics	No. of Periods
I	Palaeontology: Palaeontology:Fossils- definition, essentials and modes of fossilization.Uses of fossils, Derived fossils, Index fossils & their significance, Use of Palaeontology in Stratigraphy,Palaeoecology&Palaeogeography, Brief idea about Micropalaeontology and its significance, Introduction to Gondwana plant fossils.	12
II	Palaeontology: Morphology and Geological distribution of Foraminifera &Anthozoa fossils, Morphology and Geological distribution of Gastropoda and Lamellibranchiafossils, Morphology and Geological distribution of Cephalopoda, Morphology and Geological distribution of Echinoidea&Brachiopoda fossils, Morphology and Geological distribution of Trilobite and Graptolite fossils.	12

III	Stratigraphy : Principles of Stratigraphy, Geological Time Scale: Various divisions of Geological Time Scale, their nomenclature and type area, Basic concepts of Lithostratigraphic, Chronostratigraphic&BiostratigraphicUnits,Tectonic& Physical Subdivisions of Indian subcontinent,Distribution, classification and Economic importance of Archaeozoic rocks of India (Dharwar), Stratigraphy & Economic Importance of Archaeozoic rocks of Bastar (Chhattisgarh).	12
IV	Stratigraphy : Distribution, stratigraphy and Economic importance of Vindhyan& Chhattisgarh Supergroup of rocks, Stratigraphy, Palaeoclimate, Geographical, Geological distribution & economic importance of GondwanaSupergroup, Stratigraphy, distribution and age of Deccan-traps, Stratigraphy, distribution and fossil contents of intertrappean and infratrappean(Bagh&Lameta) Beds, Distribution, Stratigraphy and Palaeontology of Palaeozoic rocks of Salt Range.	12
V	Stratigraphy : Distribution, Stratigraphy and Economic importance of Palaeozoic rocks of Spiti Valley, Stratigraphy, Distribution, Fossil content of Cretaceous rocks of Trichonopoly, Stratigraphy, distribution, Fossil content &Economic importance of Jurassic rocks of Kutchh-Region, Distribution, Stratigraphy, economic importance of Tertiary rocks of Assam-Region, Distribution, Stratigraphy and Palaeontological importance of Siwalik group of rocks.	12

Part C	
Learning Resources	
Suggested Readings	
1)	जीवाश्मविज्ञान के सिद्धांत-डॉ. अंबिकाप्रसादअग्रवाल
(2)	जीवाश्मविज्ञान-डॉ. आर.पी. मिश्रा
(3)	अकशेरुकी एवंकशेरुकीय जीवाश्मविज्ञान-डॉ. दीपकराजतिवारी
(4)	भारतवर्षकाभूविज्ञान-डॉ.अंबिकाप्रसादअग्रवाल
(5)	प्रायोगिकभूविज्ञान भाग-3-डॉ. गुप्ता, पुनवटकर, रघुवंशी
(6)	Invertebrate Palaeontology- H.Woods.
(7)	Introduction to Palaentology- A.N. Davis.
(8)	An Introduction to Invertebrate Palaeontology- P.G. Jain & M.S.Anantharaman
(9)	Historical Geology of India- Ravindra Kumar
(10)	Geology of India- R.Vaidyanadhan&M.Ramkrishnan (Geol. Soc. Ind. Publication)





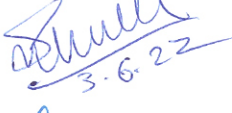

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5.	SWAYAM – https://swayam.gov.in/explorer?searchtext
6.	National digital library – https://ndl.iitkgp.ac.in
7.	e-PG pathshala (MHRD) portal, https://egpg.inflibnet.ac.in

Part D		
Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 50		
Continuous Comprehensive Evaluation (CCE): NA		
University Exam (UE):		50 marks
Internal Assessment:	Class Test	
Continuous Comprehensive Evaluation (CCE)	Assignment/Presentation	NA



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7	Prof.SunilA.K.Kerketta	Rajiv Gandhi Govt.PG College, Ambikapur (C.G.)	Member	Present online
8	Dr. NinadBodhankar	Prof. & Head Department of Geology & WRM SOS in Geology, Pt. RS University Raipur	Member	Present online
9	Dr. SandeepVansutre	Govt.Nagarjuna Science College, Raipur (C.G.)	Member	Present online
10	Pro A.K.Sandilaya	Prof., Department of Applied Geology, Dr. HS Gour University Sagar, M.P.	Member	Present online
11	Dr. BhargavaAyangar	Department of Applied Geology,NIT Raipur	Member	Present online

Part A Introduction			
Program: DegreeCourse		Class: B.Sc. III Year	Year: 2022 Session: 2024-2025
S.No.			
1	Course Code	GEOL- 6T	
2	Course Title	Earth Resources & Applied Geology (Paper II)	
3	Course Type	Theory	
4	Pre-requisite (if any)	To study in this class, students must have passed B.Sc. Part 2 class with Geology subject.	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> This course of B.Sc. Geology enables the students to understand origin, occurrence, formation process and distribution in the Indian Subcontinent of various economic minerals. Knowledge about engineering properties of rocks and soils, soil groups, geological considerations in construction of dams and tunnels, Mineral exploration and mining. 	
6	Credit Value	Theory : 4	
7	Total Marks	Maximum Marks: 50	Minimum Passing Marks : 17

Part B Content of the Course		
Total Periods: 60		
Unit	Topics	No. of Periods
I	Processes of mineral deposit formation : Economic Geology: Definition and scope. Introductory idea about Ore, ore mineral, gangue mineral, tenor, grade, assay, Concept of distribution of mineral deposits in time & space in Indian context, Brief idea about classification of mineral deposits, Igneous processes of mineralization (a) Magmatic process and its Indian examples. (b)Hydrothermal processes and its Indian examples, Sedimentary processes of mineral formation. (a) Mechanical and residual concentration (b) Precipitation (c)Evaporites, Oxidation & supergene sulphide enrichment processes	12
II	Metallic and non-metallic mineral deposits : Geological, Geographical distribution, mode of occurrence, mineralogy & economic importance of following metallic & nonmetallic deposits of India, Iron, Manganese, Chromium, Copper, Lead, Zinc, Gold, Aluminium, Refractory and Fertilizer minerals, Minerals used in cement & chemical industries.	12

III	Natural fuels : Coal deposit: Origin, & stratigraphy, Types of coal: Peat, Lignite, Bituminous & Anthracite Coal deposits of Chhattisgarh, Origin of Natural-hydrocarbon, its migration & accumulation. Types of oil traps; Structural, stratigraphic and composite. Offshore & onshore oil fields of India, Radioactive minerals : Mineralogy, Geological & Geographical distribution in India, Introduction to Reconnaissance Permit(RP), Prospecting License(PL) and Mining Lease(ML).	12
IV	Applied Geology : Engineering geology & its importance, Engineering properties of rocks, Geological consideration for site selection of Dam and Tunnels, Elementary study of Photogeology and use of Aerial photographs in geological studies, Hydrologic cycle. Mode of occurrence of ground water, Hydrologic properties of rocks. Porosity and permeability. Brief idea about aquifer, aquiclude, aquitard and aquifuge.	12
V	Applied Geology : Introduction to mineral exploration. Principles and instruments of Gravity and Electrical methods of geophysical exploration, Principles and instruments of Magnetic and Seismic methods of geophysical exploration, Elementary idea about Remote Sensing and GIS and its applications, Sampling, principles of ore reserve estimation, Environmental impact of mining.	12

Part C	
Learning Resources	
Suggested Readings	
(1) आर्थिकभूविज्ञान—कृष्णगोपालव्यास (2) आर्थिक एवंव्यावहारिकभूविज्ञान—आर.पी. मांजरेकर (3) भौमजलविज्ञान— एल.के. रिछारिया (4) प्रारंभिक खनिकी—बी.के. सिंह (5) प्रायोगिकभूविज्ञान भाग—3—गुप्ता, पुनवटकर एवंरघुवंशी (6) Economic mineral deposits of India- Umeshwar Prasad. (7) Economic mineral deposits- A.Bateman (8) Ore-deposit of India- Gokhale&Rao (9) India's Mineral Resource- S. Krishnaswami (10) Principle of Engineering Geology &Geotechniques- Krynine& Judd. (11) Ground-water Hydrology- D.K. Todd (12) Courses in mining Geology- R.N.P. Arogyaswami (13) Principle & Application of photogeology- S.N. Pandey. (14) Ground water- Assessment, Development & Management- K.R. Karanth (15) Geophysical methods in Geology- P.V. Sharma. (16) Environmental Geology- K.S. Valdiya (1987)	

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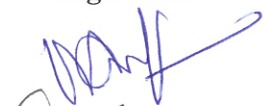



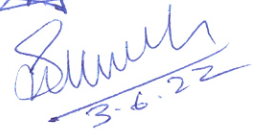

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4. <https://sites.google.com/ignou.ac.in/bscgeology>
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7. e-PG pathshala (MHRD) portal, <https://egpg.inflibnet.ac.in>

PartD AssessmentandEvaluation		
SuggestedContinuousEvaluationMethods: MaximumMarks:50 ContinuousComprehensiveEvaluation(CCE):NA UniversityExam(UE): 50 marks		
InternalAssessment: ContinuousComprehensive Evaluation(CCE)	Class Test Assignment/Presentation	NA



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3	Prof.Pradeep Singh Gour	Bhanu Pratap Deo Govt.PG.College, Kanker (C.G.)	Member	
4	Dr.Shailendra Singh Bhadauria	Govt.Nagarjuna Science College, Raipur (C.G.)	Member	
5	Dr.S.D.Deshmukh	Govt.V.Y.T PG Autonomous College,Durg (C.G.)	Member	
6	Prof.Amitanshu Shekhar Jha	Govt.Kaktiya PG College, Jagdalpur, Bastar (C.G.)	Member	
7	Prof.Sunil A.K.Kerketta	Rajiv Gandhi Govt.PG College, Ambikapur (C.G.)	Member	Present online
8	Dr. Ninad Bodhankar	Prof. & Head Department of Geology & WRM SOS in Geology, Pt. RS University Raipur	Member	Present online
9	Dr. Sandeep Vansutre	Govt.Nagarjuna Science College, Raipur (C.G.)	Member	Present online
10	Pro A.K.Sandilaya	Prof., Department of Applied Geology, Dr. HS Gour University Sagar, M.P.	Member	Present online
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