



**DEPARTMENT OF GEOSCIENCES
KRANTIGURU SHYAMJI KRISHNA
VERMA**



KACHCHH UNIVERSITY

**BACHELOR OF SCIENCE
IN
GEOLOGY**

(4 Year Programme)

(FACULTY OF SCIENCE)

ACADEMIC YEAR 2026-27

SYLLABUS OF SEMESTER VII & VIII

CURRICULUM AS PER

UNIVERSITY GRANT COMMISSION (UGC)

GUIDELINES FRAMED ACCORDING TO

NATIONAL EDUCATION POLICY (NEP)-2020 GUIDELINE

WITH EFFECT FROM JUNE – 2026

SUBMITTED BY

DEPARTMENT OF GEOSCIENCES

KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY

BHUJ- MUNDRA ROAD, BHUJ, KACHCHH- 370001

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[Signature]

Head
Department of Geosciences
Krantiguru Shyamji Krishna Verma Kachchh University
Bhuj, Kachchh- 370001

- **PEO-5: Research Independence and Professional Ethics:** To prepare students for leadership, academic research, and industrial roles by instilling scientific problem-solving abilities, professional communication skills, ethical data handling, and an understanding of international sustainable mining legislation.

PROGRAMME OUTCOMES (POs)

Upon successful completion of the 4-Year B.Sc. (Honours with Research) Geology curriculum, graduates will demonstrate the following skills and attributes:

- **PO-1: Comprehensive Geoscientific Knowledge:** Ability to identify, test, and classify rock-forming minerals, structural discontinuities, lithostratigraphic columns, and macro-to-micro fossil markers.
- **PO-2: Quantitative Subsurface and Geotechnic Analysis:** Competency to calculate crystal symmetry metrics (Miller Indices/H-M symbols), compute structural strain components, perform basic drainage basin morphometry, and evaluate geological conditions for civil engineering structures.
- **PO-3: Modern Spatial and Geospatial Technical Skills:** Mastery over open-source QGIS and digital mapping software to compile spatial thematic layers, complete satellite image interpretations, and process field data.
- **PO-4: Advanced Laboratory and Instrument Operation:** Practical experience in preparing thin sections, utilizing conoscopic lighting to generate uniaxial/biaxial interference figures, and operating instrumentation systems for mineralogical and chemical studies.
- **PO-5: Professional Field Mapping and Documentation:** Proficiency in safely navigating rugged outdoor terrains, compiling rigorous field notebooks, tracking active tectonic landforms, and managing multi-day geoscientific excursions.
- **PO-6: Environmental Stewardship and Risk Reduction:** Capacity to evaluate the ecological impacts of resource extraction, design hazard mitigation plans for disaster-vulnerable communities, and promote the conservation of regional geoheritage landmarks.
- **PO-7: Autonomous Research and Communication Excellence:** Adaptability to independently review literature, gather secondary datasets, compile formatted scientific reports using standard referencing systems (like APA), and confidently deliver technical presentations in both academic and corporate settings.



[Signature]
Head

Department of Geology
Bhuj, Kachchh University
Bhuj, Kachchh 370001

CREDIT STRUCTURE

Year	Semester	Major Courses	Minor Courses	OJT/Paper	Skill Enhancement Course (SEC)	Total Credits
4 th	VII	3 (4 Credits) = 12	1 (4 Credits) = 04	1 (4 Credits) = 04	1 (2 Credits) = 02	22
	VIII	3 (4 Credits) = 12	1 (4 Credits) = 04	1 (4 Credits) = 04	1 (2 Credits) = 02	22




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EXTENDED COURSE STRUCTURE

SEMESTER-VII

Course Category	Paper Code	Title of the Paper	Field details	Credits (T+P)
Major Course	MJGE-101	Structural Geology and Geotectonics	Field Visit to structurally and tectonically important sites	4+0
	MJGE-102	Igneous Petrology and Metamorphic Petrology	Field Visit to igneous and Metamorphic terrains	4+0
	MJGE-103	Geomorphology and Landscape Evolution	Field Visit to various Geomorphological landscape)	4+0
	MNGE-104	Advanced Mineralogy, Crystallography and Instrumentations	Field Visit to various mineral rich terrains of India	4+0
OJT/Paper:	OJGE-105	Combined Practical: Structural Geology and Geotectonics: Map Sections, Stereographic projection of the structural features etc. Igneous Petrology and Metamorphic Petrology: Megascopic and microscopical rocks, Norms calculation Geomorphology and Landscape Evolution: Geomorphic Analysis using maps, toposheets and softwares; Landscape Evolutionary Models Advanced Mineralogy, Crystallography and Instrumentations: megascopic, microscopical minerals and elemental composition of minerals and rocks, Elements of Symmetry, Miller Indices, HM symbols, stereographic projections; identification of forms with models.		0+4
		Field Techniques in Geology	A field excursion of minimum 10 days in igneous/ metamorphic/ sedimentary/ Quaternary terrain is compulsory	0+2
Skill Enhancement Course (SEC)	SCGE-106			22
TOTAL CREDITS				22




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EXTENDED COURSE STRUCTURE

SEMESTER-VIII

Course Category	Paper Code	Title of the Paper	Field details	Credits (T+P)
Major Course	MJGE-201	Principal of Stratigraphy, Sedimentology and Advanced Paleontology	Field Visit to Stratigraphic significant sites, diverse sedimentary terrain and paleontological important sites	4+0
	MJGE-202	Geology of India with special emphasis on Gujarat	Field Visit to Various Geological Terrains of Gujarat and India	4+0
	MJGE-203	Geochemistry and Isotope Geology	Academic Visit to geochemical and geochronological institute/industries	4+0
	MNGE-204	Quaternary Geology and Geoarchaeology	Field Visits to geomorphologically, Quaternary and geoarchaeologically important sites	4+0
OJT/Paper:	OJGE-205	Combined Practical: Principal of Stratigraphy, Sedimentology and Advanced Paleontology: Petrography, Grain size analysis, sieving for sedimentary environment, Stratigraphic Reconstruction, fossils identification, micropaleontology, ichnofacies Geology of India with special emphasis on Gujarat: Maps, Stratigraphic Reconstructions Geochemistry and Isotope Geology: Calculation of Atomic Wt %, Isotopes, K-Ar, Rb-Sr, Sm-Nd Radionuclide Decay Quaternary Geology and Geoarchaeology: Preparation of Geomorphological maps through RS and GIS, Morphometric Analysis etc., Geoarchaeological Artifacts Studies		0+4
Skill Enhancement Course (SEC)	SCGE-206	Remote Sensing and GIS	LAB (Satellite Image Interpretation, GIS Software- QGIS, Global Mapper, Surfer etc.)	1+1
TOTAL CREDITS				22




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DEPARTMENT OF GEOSCIENCES
FACULTY OF SCIENCE
KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY
ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Major Paper- 1: Structural Geology and Geotectonics	Credits:	4
Semester:	VII	Paper Code: MJGE-101	Hours:	60

Objectives:	The course aims to provide students with a solid grounding in the fundamentals of stress, strain, rock deformation mechanisms and fracture mechanics, and to develop their ability to apply these concepts to natural rock bodies. Through systematic study of folds, faults, joints, foliations, lineations, boudinage and shear zones, students will learn to identify, describe and classify structural features and to interpret their formation mechanisms and kinematic significance. Emphasis on practical skills will enable students to collect and analyse orientation and strain data, use fault-kinematic indicators, and construct and interpret balanced cross-sections. The course also introduces plate-tectonic principles, paleomagnetism, mantle plume dynamics and the links between tectonic regimes and surface structural patterns, reinforced by relevant case studies. Fieldwork at structurally and tectonically important sites will train students to integrate field observations with theoretical knowledge, produce accurate geological documentation and reports, and apply structural geology concepts to regional tectonic problems, resource exploration and geological hazard assessment.
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COURSE CONTENT / SYLLABUS

UNIT-1	THEORY Stress, Stress at 2D and 3D; Fracture mechanics; Mechanics of rock fracturing: fracture initiation and propagation; Coulomb's criterion and Griffith's theory; Geometrical analyses of joints and their importance; Mechanical aspects of fracturing and joint formation. Strain analysis: deformation mechanism at different scales, dislocation and diffusion creep, strain hardening and softening; Behavior of rocks under stress- elastic, plastic, viscous and visco-elastic responses and their geological significance; Concepts of petrofabrics and symmetry.	15 hrs.
UNIT-2	THEORY Fold: Classification and Mechanisms of Folds; Distribution of Stress and Strain in folds; Fold interference and superposed folds; Different types of planar and linear structures in deformed rocks; Lineations; Foliation; Boudinage; Shear Zones and its associated structures; Shear sense indicators.	15 hrs.
UNIT-3	THEORY Fault: Classification and Mechanisms of Faults; Distribution of Stress and Strain in faults; kinematics indicators of fault; Concept of fault zone weakening; fault reactivation and its significance; Concept of balanced cross sections. Joints: Joints with relation to folds and faults. Joints in relation to tectonic cycle, Orientation analyses of joints.	15 hrs.
UNIT-4	THEORY Plate motions and driving mechanism of tectonic plates; Paleomagnetism and polar wander path; Plate Tectonics: Concepts and boundaries, mantle plumes; Seafloor spreading, triple junctions; Case studies of the orogenic belts, hot spots, mantle plumes, convection and mechanism, Tectonic Setting, Oceanic ridges, Ophiolites, Cratons and passive margins; Continental rifts, Arc systems, Orogens, Tectonic features of extensional, compressional, and strike-slip-terrains and relevance to plate boundaries.	15 hrs.

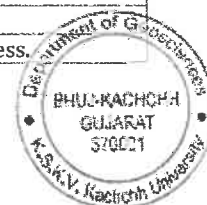
Field Details: Field Visit to structurally and tectonically important sites.

REFERENCES

1.	Ghosh, S. K. (2013). Structural geology: Fundamentals and modern developments. Elsevier.
2.	Billings, M. P. (1972). Structural geology. Prentice Hall of India Pvt. Ltd..
3.	Fossen, H. (2016). Structural geology. Cambridge university press.
4.	Davis, G. H., Reynolds, S. J., & Kluth, C. F. (2011). Structural geology of rocks and regions. John Wiley and Sons.
5.	Ramsay J. G. (1967), Folding and fracturing of Rocks, McGraw Hill Pub.
6.	Ramsay J.G. and Huber M. L., (1983). The Techniques of Modern Structural Geology, Strain Analysis, Academic Press.
7.	G.W.Chiplonkar (1962) Geological Maps. Dastane Ramchandra & Co. Pune.
8.	Marshak, S., & Mitra, G. (1988). Basic methods of structural geology.
9.	Hobbs, B.E., Means, W.D. and Williams, P.F. An outline of structural geology, John Wiley, 1976.
10.	Paor, D. Structural Geology and Personal Computer, Pergamon, 1996.
11.	Rowland, S.M. and Duebendorfer, E.M. Structural Analysis and Synthesis, Pergamon, 1994.
12.	D M Ragan Structural Geology An Introduction to Geometrical Techniques, John Wiley, 1985.
13.	Kent C. Condie, Plate Tectonics and Crustal Evolution, 4th Edition.
14.	Kearey P and F.J. Vine, Global Tectonics. Blackwell scientific Publications.
15.	Frisch, W., Meschede, M., Blakey, R.C. Plate Tectonics: Continental Drift and Mountain Building. Springer. (2011).
16.	Kearey, P., Klepeis, K.A., Vine, F.J. Global Tectonics. Wiley Blackwell. (2009).

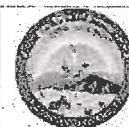


		DEPARTMENT OF GEOSCIENCES FACULTY OF SCIENCE KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY ACADEMIC YEAR- 2026-27			
Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)					
Year:	4	Major Paper- 2: Igneous and Metamorphic Petrology		Credits:	4
Semester:	VII	Paper Code: MJGE-102		Hours:	60
Objectives:	The course aims to give students a thorough understanding of the origin, evolution and classification of igneous and metamorphic rocks, integrating petrogenetic theory with field and laboratory observations. Students will learn the physical and chemical processes that generate magmas—partial melting, fractional crystallization, assimilation and magma mixing—and apply phase equilibria, trace-element behaviour and IUGS classification to interpret magmatic systems and rock suites in diverse tectonic settings. The programme develops skills to recognise and describe textures, structures and field relations of volcanic and plutonic bodies, and to evaluate petrogenetic models for granitoids, layered intrusions, ophiolites, and other magmatic associations. In metamorphic petrology, students will master the agents and types of metamorphism, metamorphic facies and facies series, reaction textures and P-T-t-d paths, and will use mineral assemblages and geochemical diagrams (AFM, AKF, ACF) to reconstruct metamorphic histories for a variety of protoliths. Fieldwork in igneous and metamorphic terrains will train students to integrate petrographic, geochemical and field data, and to apply petrological concepts to regional tectonics, mineral exploration and crustal evolution problems.				
COURSE CONTENT / SYLLABUS					
UNIT-1	THEORY	Evolution and formation of magma and magmatic systems; Magmatic differentiation, assimilation and partial melting; texture and structures of igneous rocks; Chemical and mineralogical classification; IUGS classification of igneous rocks; Crystallization paths Phase rule and binary and ternary systems; Concept of batch melting, fractional melting; Role of trace elements in igneous systems.			15 hrs.
UNIT-2	THEORY	Various rock suits: Calc Alkaline, sub alkaline and alkaline volcanic and plutonic rocks; Field relations of volcanic and plutonic rock bodies (e.g. Plutons, pyroclastics, etc.) with major case studies. Magmatic and Petrotectionic association (MORB, Flood basalts, arc magmatism, ophiolites, Kimberlites, volcanic arcs, plutonic arcs, anorthosite, lamprophyres etc. with major case studies); Genesis and classification of Granitoids; Layered mafic intrusions.			15 hrs.
UNIT-3	THEORY	Introduction to Metamorphism: Agents, changes, types of metamorphism; metamorphic grade; Types of protolith, Classification of metamorphic rocks; Metamorphism of Foliated, lineated; non foliated and non-lineated rocks; Structures and Textures of metamorphic rocks; Origin of fabrics in metamorphic system.			15 hrs.
UNIT-4	THEORY	Concept of Metamorphic facies; Metamorphic facies series: Barrovian, Buchan and high-pressure facies, Metamorphic fluids: Types of metamorphic fluids, Metamorphism of pelites, mafic ultramafic rocks, siliceous and dolomites; Metamorphic reactions: Polymorphic reactions, exsolution, solid-solid net transfer, devolatilization, continuous, ion exchange, oxidation/reduction reactions; AFM, AKF, ACF diagrams, Migmatites; P-T-t-d path construction.			15 hrs.
Field Details: Field Visit to igneous and Metamorphic terrains.					
REFERENCES					
1.	Winter, J. D. (2014). Principles of igneous and metamorphic petrology. Pearson.				
2.	Philpotts, A., & Ague, J. (2009). Principles of igneous and metamorphic petrology. Cambridge University Press.				
3.	Bose M.K. (1997). Igneous Petrology.				
4.	White, W. M. (2020). Geochemistry. John Wiley & Sons.				
5.	Robin Gill (2010) Igneous Rocks and Processes: a practical guide. John Wiley& Sons.				
6.	Srivastava, Rajesh K. and Chandra, R., (1995): Magmatism in Relation to Diverse Tectonic Settings, A.A. Balkema, Rotterdam.				
7.	Myron G. Best Igneous and Metamorphic Petrology, CBS Publishers.				
8.	Anthony Hall Igneous Petrology, Longman, 1987.				
9.	Carmichael, I.S.E., J. Igneous Petrology, McGraw Hill 1974.				
10.	Cox, K.G. Bell, J.D. and Pankhurst, R.J. Interpretation of Igneous Rocks. George Ullen & Unwin 1979.				
11.	Wilson, M. Igneous Petrogenesis. Unwin Hyman 1990.				
12.	Blatt, H., Tracy, R.J. and Edwards, B. Petrology: Igneous, Sedimentary and Metamorphic Freeman, 2006.				
13.	Phillpots A., Introduction to igneous and metamorphic petrology. Prentice Hall Pub., New Delhi.				
14.	Ehlers, E.G. and Blatt, H., Petrology: Igneous, Sedimentary and Metamorphic Freeman, 1982.				
15.	Turner, F. J., & Verhoogen, J. (1960). Igneous and metamorphic petrology.				
16.	Barker, A. J. (2013). Introduction to metamorphic textures and microstructures. Routledge.				
17.	Yardley, B., & Warren, C. (2021). An introduction to metamorphic petrology. Cambridge University Press.				





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FACULTY OF SCIENCE
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ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Major Paper- 3: Geomorphology and Landscape Evolution	Credits:	4
Semester:	VII	Paper Code: MJGE-103	Hours:	60

Objectives:	The course aims to equip students with a comprehensive understanding of the processes that shape Earth's surface and the principles of landscape evolution. Students will study weathering, erosion, mass movement and pedogenesis, and learn to identify and interpret fluvial, glacial, eolian, coastal, lacustrine, karst and submarine landforms, with emphasis on the geomorphology of India. The course introduces competing models of landscape evolution and the roles of climate, tectonics and sea-level change as controlling factors, enabling students to evaluate and apply these models to real-world terrains. Instruction in soil terminology, soil formation factors, soil properties and recognition of palaeosols will provide grounding for linking surficial processes to sedimentary records. Practical training in geomorphological mapping, morphometric analysis and GIS/DEM-based landscape analysis will develop students' skills in data acquisition, quantitative interpretation and reporting. Field visits to representative geomorphological sites will consolidate classroom learning and prepare students to apply geomorphological concepts to environmental assessment, hazard evaluation and land-use planning.
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COURSE CONTENT / SYLLABUS

UNIT-1	THEORY Dynamics of Geomorphology: Erosion and Weathering processes; pedogenesis and mass movement; Geomorphic processes and landforms –fluvial, glacial, eolian, lacustrine, coastal and karst (erosional and depositional landforms), Submarine relief; Geomorphology of India: Geomorphological features and zones.	15 hrs.
UNIT-2	THEORY Models of landscape evolution-Evolutionary cycle, slope replacement model, pediplanation model, equilibrium model. Introduction to controlling factors of landscape evolution-climate, tectonics and sea level change.	15 hrs.
UNIT-3	THEORY Soil terminology, components, soil profile and discrimination, Factors affecting soil formation, soil properties-physical and chemical; Recognition and characteristics of palaeosols.	15 hrs.
UNIT-4	THEORY Geomorphological mapping – analog and digital techniques, Morphometric analyses of drainage basins-morphometric indices, analysis and interpretation using GIS, DEM-types of DEMs, data sources and landscape analysis.	15 hrs.

Field Details: Field Visit to various Geomorphological landscape.

REFERENCES

1.	Thornbury, W.D. Principles of Geomorphology, Wiley Eastern, 1993.
2.	Huggett, R., & Shuttleworth, E. (2022). Fundamentals of geomorphology. Routledge.
3.	Savindra Singh. Physical Geography. Pravalika Publications, Allahbad.
4.	Bloom Arthur L, Geomorphology: A Systematic analysis of late Cenozoic landforms.
5.	G.B. Mahapatra. Textbook of Physical Geology.

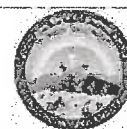


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Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)					
Year:	4	Minor Paper- 1: Advanced Mineralogy, Crystallography and Instrumentations Paper Code: MNGE-104		Credits:	4
Semester:	VII			Hours:	60
Objectives:	The course aims to give students an advanced and integrated understanding of mineralogy, crystallography and the instrumentation used in modern mineralogical investigations. Students will learn crystal chemistry, atomic structure and the diagnostic physical and chemical properties of major mineral groups, enabling accurate identification and classification of rock-forming and ore minerals. The programme develops competence in optical mineralogy and petrographic microscopy, including measurement of refractive indices, interference figures; birefringence and determination of optic sign and orientation, and trains students in thin-section techniques and photomicrography. Instruction in crystallography covers unit cells, Bravais lattices, point groups, space groups, symmetry operations and lattice defects, as well as polymorphism, polytypism and polysomatism, fostering ability to relate crystal structure to mineral properties. Hands-on training in sample preparation, analytical methods (XRD, XRF, AAS), luminescence techniques, modal analysis, etching and staining will enable students to acquire, process and interpret mineralogical data for petrological, economic and environmental applications. Field visits to mineral-rich terrains will consolidate theoretical knowledge and improve practical skills in sample collection, documentation and reporting.				
COURSE CONTENT / SYLLABUS					
UNIT-1	THEORY Atomic structures and mineral/ crystal chemistry; Diagnostic properties of rock forming minerals; All silicates, sulphates, carbonates, native minerals, sulphides, oxides, sulfosalts, hydroxides, halides, nitrates, borates, chromates, phosphates. Significance of Mineralogy.				15 hrs.
UNIT-2	THEORY Optical mineralogy; Petrological microscope; Properties of light, polarization, interference of light waves, Measurement of RI, Pleochroism, Birefringence, Optic orientation in different crystallographic systems. Determination of optic sign of uniaxial and biaxial minerals, Determination of optic axial Angle, Conoscopic or convergent polarized light; Generation of Uniaxial and Biaxial interference figures; Forms of interference figures related to sections Optical accessories like mica, gypsum and quartz plates; Determination of Optic sign of uniaxial and biaxial minerals.				15 hrs.
UNIT-3	THEORY Definition of Crystal Classification of crystals into Crystal systems, Concept of unit cell Proper and improper symmetry operations, Concept of Space lattice Derivation of 14 Bravais lattices HCP, Lattice defects (point, line and planar), Classification of crystals into 32 Point Groups, Concept of Space Group, Natural symmetry, Transformation of minerals polymorphism, polytypism, and polysomatism.				15 hrs.
UNIT-4	THEORY Instrumentation and Analytical Techniques: Sampling and Sample preparation, Thin section and polished section making, Techniques in photomicrography, Sample etching, staining and modal count techniques, Principles and geological applications of Luminescence, Atomic Absorption Spectroscopy X-ray Fluorescence spectroscopy, X-ray diffractometry.				15 hrs.
Field Details: Field Visit to various mineral rich terrains of India.					
REFERENCES					
1.	Klein, C., <i>Manual of Mineral Science</i> . 11nd edition, Wiley (2018).				
2.	J. D. Dana, <i>Manual of Mineralogy</i> , New Haven, 1871.				
3.	Dexter Perkins, <i>Mineralogy</i> . Pearson (2015).				
4.	Kerr, P. F. and Rogers, A.F., <i>Optical Mineralogy</i> . McGraw-Hill, 1977.				
5.	Read, H.H. <i>Rutley's Elements of Mineralogy</i> , CBS Publishers and Distributors. (1960).				
6.	Donald Bloss, <i>Crystallography and Crystal chemistry</i> , Holt Rinehart and Winstar Jr., 1971.				
7.	Kerr, P. F. and Rogers, A.F., <i>Optical Mineralogy</i> . McGraw Hill, 1977.				
8.	Deer, W.A, Howie, R.A., and Zussman, J. <i>An Introduction to rock forming minerals</i> , Longman, 1966.				
9.	Berry, L.G. and Mason, B. <i>Mineralogy</i> , Freeman, 1957.				
10.	Hutchinson, C.S. 1974: <i>Laboratory Handbook of Petrographic Techniques</i> . John Wiley.				





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ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	OJT/Paper: Combined Practical	Credits:	4
Semester:	VII	Paper Code: OJGE-105	Hours:	120

Objectives:	The combined practical course is designed to give students intensive hands-on training across structural geology, petrology, geomorphology and mineralogy so they can apply classroom theory to real-world data and samples. Students will develop practical skills in field mapping, map-section construction and stereographic projection for structural analysis; megascopic and microscopic description of igneous and metamorphic rocks, modal counts and normative calculations for petrogenetic interpretation; geomorphic mapping and quantitative landscape analysis using toposheets, maps, DEMs and relevant software to test landscape-evolution models; and mineral identification, crystallographic indexing (Miller indices, Hermann-Mauguin symbols), symmetry analysis and basic instrumental methods for elemental and phase analysis. Emphasis on careful sample collection, preparation, documentation, photomicrography and report writing will prepare students to integrate laboratory and field results for regional geological interpretation, resource evaluation and problem-solving in research and professional practice.
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COURSE CONTENT / SYLLABUS

LAB-1	PRACTICAL Structural Geology and Geotectonics: Map Sections, Stereographic projection of the structural features etc.	30 hrs.
LAB-2	PRACTICAL Igneous Petrology and Metamorphic Petrology: Megascopic and microscopic rocks, Norms calculation.	30 hrs.
LAB-3	PRACTICAL Geomorphology and Landscape Evolution: Geomorphic Analysis using maps, toposheets and softwares, Landscape Evolutionary Models.	30 hrs.
LAB-4	PRACTICAL Advanced Mineralogy, Crystallography and Instrumentations: megascopic, microscopic minerals and elemental composition of minerals and rocks, Elements of Symmetry, Miller Indices, HM symbols, stereographic projections; identification of forms with models.	30 hrs.

REFERENCES

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ACADEMIC YEAR- 2026-27**



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Skill Enhancement Course (SEC): Field Techniques in Geology	Credits:	2
Semester:	VII	Paper Code: SCGE-106	Hours:	60

Objectives: The course aims to develop students' practical competence in geological field methods through sustained outdoor training across igneous, sedimentary and metamorphic terrains. Students will learn systematic data collection, representative sampling, and geological photographic techniques, and will gain hands-on experience in geomorphological, structural and stratigraphic mapping including fossil-bearing successions. Instruction covers field analysis of engineering-relevant rock and soil conditions, basic aspects of mining geology, and documentation of geoheritage sites. Emphasis on field record-keeping, sample labelling, safety and ethical practices will prepare students to produce clear field reports, integrate field and laboratory data, and apply field techniques to research, exploration and applied geoscience problems.

COURSE CONTENT / SYLLABUS

SEC	PRACTICAL	60 hrs.
	Outdoor practical in Igneous, Sedimentary and Metamorphic terrains. Data Collection, Sampling and Photographic Techniques in Geological Field. Geomorphological and Structural Mapping and analyses. Studies of stratigraphic successions and fossil record. Studies of engineering structures with reference to geosciences. Understanding aspects of mining geology, Studies of Geoheritage sites etc.	

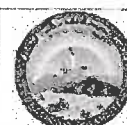
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1. Angela L. Coe: Geological Field Techniques.
2. S.M. Mathur: Guide to Field Geology.
3. Compton, R. R., & Compton, R. R. (1985). Geology in the Field (p. 416). New York: Wiley.
4. Field Geology, Frederic Henry Lahee, Publisher McGraw-Hill Book Company, 1961.





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ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Major Paper- 1: Principal of Stratigraphy, Sedimentology and Advanced Paleontology	Credits:	4
Semester:	VIII	Paper Code: MJGE-201	Hours:	60

Objectives: The course aims to provide students with a comprehensive foundation in stratigraphy, sedimentology and advanced paleontology, linking stratigraphic principles and global events to methods of stratigraphic analysis (litho-, chrono-, bio-, sequence-, magneto- and seismo-stratigraphy). Students will learn to describe, quantify and interpret sedimentary particles, textures, structures and facies, and to reconstruct depositional processes, paleoenvironments and basin evolution using sedimentological and provenance indicators. Emphasis on fossil preservation, taxonomy, taphonomy and paleoecology will train students to use macrofossils, microfossils, trace fossils and palaeobotanical evidence for biostratigraphic correlation, palaeobiogeographic reconstruction and environmental interpretation. Fieldwork in stratigraphically and paleontologically significant terrains will develop practical skills in stratigraphic logging, paleocurrent analysis, sample collection and fossil documentation, enabling students to integrate field observations with laboratory data to address problems in basin analysis, resource exploration and Earth-history investigations.

COURSE CONTENT / SYLLABUS

UNIT-1	THEORY Introduction to stratigraphy, Principles of Stratigraphic; Major global geological/stratigraphical events (viz. Glaciation, deglaciation, mass extinction, stromatolites, snow ball earth); Various techniques adopted for Stratigraphical analysis: Lithostratigraphy and Chronostratigraphy, Biostratigraphy, Sequence Stratigraphy, Magnetostratigraphy and Seismo-stratigraphy.	15 hrs.
UNIT-2	THEORY Introduction to Sedimentology; Kinds of sedimentary particles; sedimentary texture shape, size, fabric and surface textures, methods of textural analysis, textural parameters and their significance; Rocks of mechanical origin, Gravels, Rudaceous sedimentary rocks (Conglomerates & Breccias); Sands & Sandstones; Shales, Argillites & Siltstones; Rocks of chemical and biochemical origin: Limestones & Dolomites; Hydraulics, sediment transportation and structures; Liberation and flux of sediments; processes of transport and generation of sedimentary structures; Paleocurrent analysis: Paleocurrent indicators; Sedimentary Provenance indicator. Sedimentary environments and facies; Classification of environments; Physical and chemical parameters of depositional environments; Structures and vertical sequences formed in alluvial, deltaic, coastal, deep sea, Aeolian & carbonate environments, Evolution and types of Sedimentary basins.	15 hrs.
UNIT-3	THEORY Fossils; Preservation and fossil record; Taxonomy and taphonomy; Species concept; Principles of Paleocology and Paleobiogeography; Morphology, classification and geological distribution of invertebrates (Trilobites, bivalves, brachiopods, gastropods, echinoids, ammonites, graptolite, belemnite, coral).	15 hrs.
UNIT-4	THEORY Classification of Vetebrate animal kingdom; Morphology, classification and geological distribution of vertebrates; Evolutionary history of horse, camel, elephant and primates; Evidences from fossil record, major structural and physiological changes in vertebrates in India. Classification and environmental significance of trace fossils, Animal sediment relationship using ichnofacies. Microfossils (foraminifera, ostracoda, conodonts, bryozoa); Paleobotany (plant, spores, pollens).	15 hrs.

Field Details: Field Visit to Stratigraphic significant sites, diverse sedimentary terrain and paleontological important sites

REFERENCES

1.	Sam Boggs, 1995. Principles of Sedimentology and Stratigraphy, Print iceHall, New Jersey.
2.	Nichols, G., 1999. Sedimentology and Stratigraphy, Blackwell publishing.
3.	Sengupta, S. (2017). Introduction to sedimentology. Routledge.
4.	Pettijohn, F.J., 1975. Sedimentary Rocks, Harper and Row Publ. New Delhi.
5.	Tucker, M.E., 2006. Sedimentary Petrology. Blackwell Publishing.
6.	Blatt, H., Middleton, G.V. and Murray, R.C. (1980): Origin of Sedimentary Rocks, Prentice Hall Inc.
7.	Amal Das Gupta. Paleontology.
8.	Clarkson, E.N.K. Invertebrate Paleontology and Evolution, ELBS. 1987.
9.	P.C. Jain. Paleontology (Paleobiology) Evolution and animal distribution.
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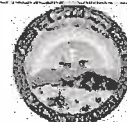


		DEPARTMENT OF GEOSCIENCES FACULTY OF SCIENCE KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY ACADEMIC YEAR- 2026-27			
Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)					
Year:	4	Major Paper- 2: Geology of India with special emphasis on Gujarat		Credits:	4
Semester:	VIII	Paper Code: MJGE-202		Hours:	60
Objectives:	The course aims to provide students with a detailed understanding of the geological evolution of India with focused study of Gujarat, integrating regional tectonics, stratigraphy, paleontology and resource distribution. Students will learn the tectonic framework and major crustal divisions of India, including cratons and mobile belts, and will apply stratigraphic principles to Proterozoic and Phanerozoic basins. Emphasis on Gujarat covers the physiography, structure, tectonics, stratigraphy, geomorphology, seismicity, fossil record and mineral resources of Mainland Gujarat, Saurashtra and Kutch, enabling students to relate local geology to regional and national geodynamic processes. Field visits to representative terrains across Gujarat and India will develop practical skills in geological mapping, stratigraphic logging, structural interpretation and resource documentation, preparing students to use regional geological knowledge in basin analysis, exploration, seismic hazard assessment and applied geological investigations.				
COURSE CONTENT / SYLLABUS					
UNIT-1	THEORY	Tectonic Framework of India; Tectonic divisions, Cratons (Dharwar, Aravalli, Singhbhum), Mobile belts (Eastern Ghat, Satpura and Precambrian of Himalaya), Proterozoic Sedimentary basins: Paleoproterozoic (Bijawar, Gwalior, Papaghni Sub basin) and Mesoproterozoic Basins (Vindhyan, Parinatha Godavari, Cuddapah).			15 hrs.
UNIT-2	THEORY	Phanerozoic Stratigraphic of India (Paleozoic, Mesozoic and Tertiary).			15 hrs.
UNIT-3	THEORY	Physiographic division of Gujarat; Structure, tectonics, stratigraphy and geomorphology of Mainland Gujarat, Mineral resources of Mainland Gujarat; Seismicity of Mainland Gujarat; Fossil records of Mainland Gujarat.			15 hrs.
UNIT-4	THEORY	Structure, tectonics, stratigraphy and geomorphology of Saurashtra and Kutch; Mineral resources of Saurashtra and Kutch; Seismicity of Saurashtra and Kutch; Fossil records of Saurashtra and Kutch.			15 hrs.
Field Details: Field Visit to Various Geological Terrains of Gujarat and India.					
REFERENCES					
1.		M. Ramakrishnana and R. Vaidyanathan: Geology of India (Vol. 1 & 2), (GSI), Bangalore.			
2.		Valdiya, K.S., The making of India Geodynamic Evolution. MacMillan, 2010.			
3.		Ravindra Kumar: Fundamentals of Historical Geology and Stratigraphy of India. 2010			
4.		Krishnan, M. S., Geology of India and Burma, CBS Publisher, 2006.			
5.		Sharma, R. (2009). Cratons and fold belts of India (Vol. 127). Springer.			
6.		S. S. Merh. Geology of Gujarat.			
7.		Biswas, S. K., Mahender, K., & Chauhan, G. D. (2022). Field Guide Book of Geology of Kutch (Kachchh) Basin, Gujarat, India. Springer.			
8.		BISWAS, S. K. 1993. Geology of Kutch. KDM Institute of Petroleum Exploration, Dehradune, 450 pp.			





**DEPARTMENT OF GEOSCIENCES
FACULTY OF SCIENCE
KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY
ACADEMIC YEAR- 2026-27**



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Major Paper- 3: Geochemistry and Isotope Geology	Credits:	4
Semester:	VIII	Paper Code: MJGE-203	Hours:	60

Objectives:	The course is designed to give students a solid grounding in chemical principles that control Earth materials and processes, combining elemental and isotopic perspectives. Students will learn elemental distribution and behavior (including trace elements, REE and PGE) in the Earth-solar system context and apply geochemical classification and distribution-coefficient concepts to lithosphere, hydrosphere and atmosphere. The programme introduces nuclear physics relevant to geochronology and trains students in radiogenic dating methods (Rb-Sr, Sm-Nd, U-Pb, Pb-Pb, K-Ar and allied techniques such as C-14, TL and OSL), enabling interpretation of age data for rocks, minerals and sediments. Instruction on geochemical systematics, thermodynamics (entropy, enthalpy, Gibbs free energy) and open/closed-system behavior develops students' ability to model element mobility and equilibria. Coverage of stable-isotope theory and fractionation (O, C, H) prepares students to use isotopic proxies for palaeoclimate, provenance and fluid-process studies. An academic visit to a geochemical/chronology laboratory or industry will consolidate theoretical learning with exposure to analytical instrumentation and real-world data interpretation.
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COURSE CONTENT / SYLLABUS

UNIT-1	THEORY Fundamental concept of Geochemistry; Atomic structures and properties of elements in the Periodic Table; Origin and abundance of elements in the solar system and in the Earth and its constituents; Geochemical behavior of Trace, Rare Earth Elements (REE) and PGE; Cosmic abundance of elements.	15 hrs.
UNIT-2	THEORY Composition of Planets; Meteorites: their classification, mineralogy, and origin: Crust, Mantle, and Core composition of Earth; Geochemistry of hydrosphere, lithosphere and atmosphere; Geochemical classification of elements; Concept of distribution coefficient.	15 hrs.
UNIT-3	THEORY Introduction and physics of nucleus; Radioactive decay, law of radioactivity and half-life period; Types of Radioactive decay; Geochemistry of Radioactive Isotopes: Rb, Sr, K, Ar, Sm, Nd, U, Th, Pb; Radiogenic Isotope Geochronometers: Sm-Nd method, Rb-Sr method, U-Pb, Th-Pb, Pb-Pb method. Carbon, Thermoluminescence and OSL dating method.	15 hrs.
UNIT-4	THEORY Geochemical systems: Open, closed, isolated; Concept of equilibrium, Entropy, enthalpy, Gibbs free energy, and laws of thermodynamics; Stable Isotopes: nature, abundance and fractionation; Stable isotopes of oxygen, carbon and hydrogen; Isotope fractionation and its applications for Paleoclimate.	15 hrs.

Academic Visit: Academic Visit to geochemical and geochronological institute/industries.

REFERENCES

1. Mason, B. Principles of Geochemistry, Wiley Eastern, 1982.
2. Faure, G. Inorganic Geochemistry, Prentice Hall, 1991.
3. William M. White. Geochemistry. Wiley, 2013.
4. Krauskopf, K.B. Introduction to Geochemistry, Mc Graw Hill, 1994.
5. Aswathnarayana, U. Principles of Nuclear Geology, Oxford Press, 1985.



		DEPARTMENT OF GEOSCIENCES FACULTY OF SCIENCE KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY ACADEMIC YEAR- 2026-27			
Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)					
Year:	4	Minor Paper- 1: Quaternary Geology and Geoarchaeology		Credits:	4
Semester:	VIII	Paper Code: MNGE-204		Hours:	60
Objectives:	The course is designed to provide students with a comprehensive grounding in the geological, climatic, and tectonic processes that shaped the Earth during the Quaternary Period, while integrating an interdisciplinary geoarchaeological perspective. Students will learn the fundamental characteristics of Quaternary stratigraphy, global climatic fluctuations (glacial-interglacial cycles); and the mechanisms driving eustatic and relative sea-level variations, with special reference to the Indian coastline. The programme introduces the principles of landscape evolution, training students to analyze how geomorphic systems respond to climate and tectonics, and utilizing geomorphic markers and neotectonic indices to identify active landform changes. Instruction on paleoseismology equips students with field techniques to map prehistoric landforms, recognize co-seismic event horizons, and evaluate earthquake recurrence intervals across diverse tectonic settings. Additionally, coverage of advanced geochronological techniques—including Radiocarbon, Uranium-series, Luminescence (TL/OSL), and Amino Acid dating—enables precise chronological framing of ancient materials and sediments. The course bridges Earth sciences and anthropology by introducing geoarchaeology, detailing the stages of prehistoric cultural evolution, early human settlements, and the salient features of the Indus Valley Civilization. Through the synthesis of multi-proxy data and stratigraphic sequences, students will learn to execute paleoenvironmental reconstructions. Field visits to geomorphologically, seismically, and archaeologically significant sites will consolidate theoretical learning with real-world spatial observations and data interpretation.				
COURSE CONTENT / SYLLABUS					
UNIT-1	THEORY	Nature and major characteristics of Quaternary Period; Quaternary Stratigraphy; Quaternary climatic changes-glacial and interglacial periods; Sea level changes – Eustatic Sea Level (ESL), Relative Sea Level (RSL), glacio-eustasy, tectono-eustasy; Sea level changes during Quaternary with special reference to India.			15 hrs.
UNIT-2	THEORY	Application of various proxy indicators for paleoenvironmental/ paleoclimatic studies. Responses of geomorphic systems to climate, sea level and tectonics on variable time scales in the Quaternary. Neotectonics and active tectonics for changes in landforms geomorphology; Geomorphic markers/ indices, Quaternary dating methods: Radiocarbon, Uranium series, Luminescence, Amino acid, relative dating methods.			15 hrs.
UNIT-3	THEORY	Paleoseismology: Introduction to paleoseismology, prehistoric earthquakes and dating, recurrence and dating, Co-seismic event horizon, co-seismic uplift, Field techniques in paleoseismology, mapping paleoseismic landforms, prehistoric stratigraphy, Paleoseismology of extensional and compressional/ subduction zone tectonic environments.			15 hrs.
UNIT-4	THEORY	Introduction to Geoarchaeology: Definition, scope and its history; Stages of prehistoric cultural evolution—Palaeolithic, Mesolithic, Neolithic, and Chalcolithic; Early human settlements in the Indian subcontinent; Origin, extent, and salient features of the Indus Valley Civilization and post-Harrappan developments; Role of geology in archaeological research and vice versa; Methods for identifying and interpreting stratigraphic sequences; Paleoenvironmental reconstruction, proxy data and their interpretation: important case studies of paleoenvironmental reconstruction in archaeology; Dating Geoarchaeological Material.			15 hrs.
Field Details: Field Visits to geomorphologically, Quaternary and geoarchaeologically important sites.					
REFERENCES					
1.	Bradley, R.S. Paleoclimatology: Reconstructing Climates of the Quaternary.				
2.	Cronin, T.M. Paleoclimates: Understanding Climate Change Past and Present.				
3.	Bull W. D. (1991) Geomorphic Responses to Climatic Change, Oxford Uni. Press New York.				
4.	Keller E. A. (1986) Active Tectonics National Academic Press, New York.				
5.	Lowe, J.J. & Walker, M.J.C. Reconstructing Quaternary Environments, Longman (1984).				
6.	Christopher L. Hill, Jr. Rapp, George: Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation (2006).				
7.	N. Tiwari; V. Singh; S. B. Mehra: Quaternary Geoarchaeology of India, 2023.				
8.	Allchin, B. & Allchin, R. The Rise of Civilization in India and Pakistan.				
9.	Coningham, R. & Young, R. The Archaeology of South Asia: From the Indus to Asoka, c. 6500 BCE–200 CE.				
10.	Maher, B.A. & Thompson, R. Quaternary Climates, Environments and Magnetism.				
11.	James P. McCalpin (2009), Paleoseismology, Academic Press.				
12.	Bull and Mc Fadden. Tectonic Geomorphology.				





DEPARTMENT OF GEOSCIENCES
FACULTY OF SCIENCE
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ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	OJT/Paper: Combined Practical	Credits:	4
Semester:	VIII	Paper Code: OJGE-205	Hours:	120

Objectives:	The course is designed to provide students with hands-on laboratory and analytical skills, bridging theoretical concepts with empirical datasets across the key sub-disciplines of geosciences. Students will develop practical expertise in the principles of stratigraphy, sedimentology, and advanced paleontology by conducting thin-section petrography, performing grain-size sieve analysis to interpret depositional environments, and executing stratigraphic reconstructions. The programme trains students in taxonomic fossil identification, micropaleontology, and the analysis of ichnofacies to infer paleoecological conditions. Specialized practical exercises on the Geology of India, with a dedicated focus on the geological framework of Gujarat, will enable students to interpret complex regional maps and construct precise lithostratigraphic columns. Additionally, instruction in geochemistry and isotope geology will equip students with quantitative skills to calculate atomic weight percentages and model radionuclide decay pathways for major geochronological systems, including Potassium-Argon (K-Ar), Rubidium-Strontium (Rb-Sr), and Samarium-Neodymium (Sm-Nd). Finally, coverage of Quaternary geology and geoarchaeology will train students to integrate Remote Sensing (RS) and Geographic Information Systems (GIS) to generate geomorphological maps, perform quantitative drainage morphometric analyses, and systematically examine and categorize geoarchaeological artifacts. By synthesizing data across these four laboratory components, students will cultivate the rigorous technical competency required for advanced research, field investigations, and industrial applications.
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COURSE CONTENT / SYLLABUS

LAB-1	PRACTICAL Principal of Stratigraphy, Sedimentology and Advanced Paleontology: Petrography, Grain size analysis, sieving for sedimentary environment, Stratigraphic Reconstruction, fossils identification, micropalaeontology, ichnofacies.	30 hrs.
LAB-2	PRACTICAL Geology of India with special emphasis on Gujarat: Maps, Stratigraphic Reconstructions.	30 hrs.
LAB-3	PRACTICAL Geochemistry and Isotope Geology: Calculation of Atomic Wt. %, Isotopes, K-Ar, Rb-Sr, Sm-Nd Radionuclide Decay.	30 hrs.
LAB-4	PRACTICAL Quaternary Geology and Geoarchaeology: Preparation of Geomorphological maps through RS and GIS, Morphometric Analysis etc., Geoarchaeological Artifacts Studies.	30 hrs.

REFERENCES

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ACADEMIC YEAR- 2026-27



Bachelor of Science in Geology: Regular (NEP-2020) (4 Year Programme)

Year:	4	Skill Enhancement Course (SEC): Remote Sensing and GIS	Credits:	2
Semester:	VIII	Paper Code: SCGE-206	Hours:	45

Objectives: The course is designed to equip students with a robust foundation in the principles and workflows of geospatial technologies, focusing on their direct applications to geological and geomorphological investigations. In the theoretical module, students will learn the physics of electromagnetic radiation, data acquisition systems, and the geometric properties of aerial photography alongside digital photogrammetry. The curriculum covers satellite remote sensing, visual image interpretation, and digital image processing—including image enhancement and classification—to extract topographic and active tectonic structural features. Concurrently, instructions in Geographical Information Systems (GIS) introduce hardware architectures, database structures, spatial data models (raster and vector data formats), and continuous versus discrete data types. The practical component of the programme provides rigorous hands-on technical training using open-source QGIS software, covering core data preparation workflows such as georeferencing, digitization of thematic layers, and the integration of Global Positioning System (GPS) field data. Students will develop specialized analytical skills in basic photogrammetry, parallax height measurements, and digital elevation model (DEM) based terrain characterization to construct drainage patterns, count contours, analyze linear/planar elements, and map land use/land cover. Ultimately, coverage of advanced overlay analysis and automated watershed modeling prepares students to tackle real-world environmental challenges, resource exploration, and academic research in regional geosciences.

COURSE CONTENT / SYLLABUS

SEC	THEORY	15 hrs.
	Remote Sensing: Introduction and Principles of Remote Sensing, Aerial Photographs and their Geometry, Photogrammetry, Satellite Remote Sensing, Image Interpretation and Digital image processing, and Image Enhancement, Image classification, Interpretation of topographic and tectonic features. GIS: Principles and applications of Geographical Information System, GIS hardware components and GIS roles, Geographic data and database- spatial data, types of GIS database and discrete and continuous data, Raster and vector data, Application of GIS in Geosciences.	
	PRACTICAL	30 hrs.
	Laboratory exercise for remote sensing and Photogeology, satellite imagery interpretation for geological and geomorphological applications, Basic photogrammetry exercises like parallax measurements for height, Hands on training on QGIS- Georeferencing, Contour, Drainage, DEM-based terrain analysis, Areal, Planer and linear Features, overlay analysis, Field and Object Based Model, Digitization of thematic layers, Watershed analysis, GPS integration, Land use/land cover mapping.	

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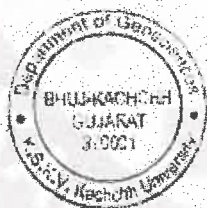
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2. S. A. Druary, Image Interpretation in Geology.
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4. Bhatta, B. (2008). Remote sensing and GIS (Vol. 2). New Delhi: Oxford University Press.
5. Curran, P. J. (1988) Principles of remote sensing.
6. Leuder, D. R. Aerial photographic interpretation: Principles and Interpretation.



Distribution of Credits and Marks for Each Semester of B. Sc. Geology: Regular (NEP-2020) (4 Year Programme)

Semester – VII				
Major Paper				
Paper Code	Title of the Paper	Credits		Marks (Internal (C) + External (U))
		Theory	Practical	
MJGE-101	Structural Geology and Geotectonics	4	0	100 (50 + 50)
MJGE-102	Igneous and Metamorphic Petrology	4	0	100 (50 + 50)
MJGE-103	Geomorphology and Landscape Evolution	4	0	100 (50 + 50)
Minor Paper				
MNGE-104	Advanced Mineralogy, Crystallography and Instrumentations	4	0	100 (50 + 50)
OJT/Paper				
OJGE-105	Combined Practical	0	4	100 (50 + 50)
	Viva-voce			50 (25 + 25)
Skill Enhancement Course (SEC)				
SCGE-106	Field Techniques in Geology	0	2	50 (25 + 25)
Total Credits		16	6	Total Marks: 600 (300 + 300)
TOTAL CREDITS FOR SEMESTER - VII		22		

Semester – VIII				
Major Paper				
Paper Code	Title of the Paper	Credits		Marks (Internal (C) + External (U))
		Theory	Practical	
MJGE-201	Principal of Stratigraphy, Sedimentology and Advanced Paleontology	4	0	100 (50 + 50)
MJGE-202	Geology of India with special emphasis on Gujarat	4	0	100 (50 + 50)
MJGE-203	Geochemistry and Isotope Geology	4	0	100 (50 + 50)
Minor Paper				
MNGE-204	Quaternary Geology and Geoarchaeology	4	0	100 (50 + 50)
OJT/Paper				
OJGE-205	Combined Practical	0	4	100 (50 + 50)
	Viva-voce			50 (25 + 25)
Skill Enhancement Course (SEC)				
SCGE-206	Remote Sensing and GIS	1	1	50 (25 + 25)
Total Credits		17	5	Total Marks: 600 (300 + 300)
TOTAL CREDITS FOR SEMESTER - VIII		22		



(Signature)

DEAN

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