FOUR YEAR UNDERGRADUATE PROGRAMMES (FYUGP)
IN GEOLOGY UNDER RABINDRANATH TAGORE UNIVERSITY
AS PER NEP-2020

1. Four Year Undergraduate Programmes (FYUGP)
2. Subject: Geology (MD-1)
3. Semester: First Semester
4. Course Name: Introduction to Geology
5. Paper Code: MD- GLG-1.1
6. Course level: 100
7. Credit: 3 (Th-3)
8. ***Programme Specific Outcome:Programme Specific Outcome:*** *The Bachelor of Science in Geology (Major) Programme in Four Years Undergraduate Programme (FYUGP) of Lumding College under Rabindranath Tagore University includes a Graded Semester System which combines detailed theoretical knowledge, practical knowledge and extensive Field Survey/ Field work. The Primary goal of this Undergraduate Programme is to provide students' Academic competencies, ethical values and professional skills that facilitate their transition from Undergraduate to Post-graduate work or Professional positions. Students will develop the aptitudes and dispositions necessary to help democratized society by obtaining and maintaining employment as a professional Geologist.*

   Course Outcome: *This course provides integrated understanding of the Solar system, Earth as a Planet, its complex processes. Students will get a clear concept about geomorphology, processes and their impact on Earth's surface and landscape development.*

   Syllabus showing each unit against class number and marks:

Unit No.	Unit Content	No. Of Classes	Marks
Unit-1	Introduction to various branches of Earth Sciences and their relation to other branches of science. General characteristics and origin of the Universe, Solar System and its planets. Earth in the solar system - origin, size, shape, mass, density, and its age. ; Internal Structure of the Earth.	15	25

Unit-2	Elementary knowledge of Lithosphere, biosphere, Hydrosphere and Atmosphere and their interrelationship; Weather and climatic changes.	15	25
Unit-3	Endogenetic and exogenetic processes of the Earth; weathering and erosion; Soil: formation, types, soil profile and soil types of India. Earthquake; Volcanoes	15	25

SUGGESTED READINGS:

1. Duff, P.M.D., & Duff, D.(Eds). (1993). Holmes' Principles of Physical Geology. Taylor & Francis.
2. Emiliani, C. (1992). Planet Earth: Cosmology, Geology, and the Evolution of Life & Environment. Cambridge University Press
3. Patwardhan, A.M., The Dynamic Earth Syatem, PHI Learning
4. Summerfield M.A.(1991), Global Geomorphology-an introduction to the Study of Landforms, Prentice Hall

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1. Four Year Undergraduate Programmes (FYUGP)
2. Subject: Geology(MD-2)
3. Semester: Second Semester
4. Course Name: Minerals and Rocks
5. Course Code: MD- GLG-2.1
6. Course level: 100
7. Credit:3(Th-2, Pract-1)

Course Outcome: *This course provides integrated understanding of the different physical properties of rocks and minerals. This course provides a detail optical mineralogy to identify the mineralogical composition of geological materials in order to help reveal their origin and evolution.*

Study and identification of different rocks and minerals is a very important part of petrology and mineralogy and in the practical classes the students will get sufficient knowledge to identify the rocks and minerals.

Syllabus showing each unit against class number and marks

Unit No.	Unit Content	Class hours	Credit/Marks
Unit-1	Minerals: Definitions, Mineralogical composition of the Earth, Physical Properties of mineral, mineral classification, Nature of Light and Principles of Optical Mineralogy: Polarization of light, Double refraction, Pleochroism, Extinction, Interference colour. Isotopic and Anisotropic minerals; Uniaxial and Biaxial, Optic axis. Study of physical and optical properties of the following minerals: Quartz, Orthoclase, Microcline, Plagioclase, Augite, Hornblende, Garnet, Muscovite, Biotite, Kyanite, Sillimanite, Calcite.	15	25

Unit-2	Definitions and Types of Rocks Formation of Igneous Rocks, forms of igneous rock, structure and texture of igneous rocks, petrographic notes on granite, rhyolite, pegmatite, gabbro, dolerite, basalt, dunite. Processes of formation of Sedimentary Rocks**,** Structure and texture of sedimentary rocks, petrographic notes on sandstone, limestone, conglomerate, and shale. Formation of Metamorphic Rocks**,** factors and types of metamorphism, grade of metamorphism, structure and texture of metamorphic rocks, petrographic notes on slate, phyllite, schist, gneiss, marble, quartzite. Rock Cycle	15	25
Unit-3	**Practical:** Identification of the following minerals in hand specimen: Quartz, Orthoclase, Microcline, Plagioclase, Augite, Hornblende, Garnet, Muscovite, Biotite, Kyanite, Sillimanite, Calcite. Study of optical properties of the following minerals: Quartz, Orthoclase, Microcline, Plagioclase, Augite, Hornblende, Garnet, Muscovite, Biotite, Kyanite, Sillimanite, Calcite. Identification of the following rocks in hand specimen: 1. granite, rhyolite, pegmatite, gabbro, dolerite, basalt, dunite. 2. Sandstone, limestone, conglomerate, shale. 3. Slate, phyllite, schist, gneiss, marble, quartzite.	30	25

SUGGESTED READINGS:

1. Klein, C., Dutrow, B., Dwight, J., & Klein, C. (2007). The 23rd Edition of the Manual of Mineral Science (after James D. Dana). J. Wiley & Sons.
2. Kerr, P. F. (1959). Optical Mineralogy. McGraw-Hill.
3. Verma, P. K. (2010). Optical Mineralogy (Four Colour). Ane Books Pvt Ltd.
4. Deer, W. A., Howie, R. A., &Zussman, J. (1992). An introduction to the rock-forming minerals (Vol. 696). London: Longman.

5. Mukerjee, P.K (1932). Textbook of geology New York, J. Wiley & Sons, Inc.; London,; Chapman & Hall, limited.
6. Tyrrel, G.W. (1926). The Principles of Petrology, K.S. Mani for B.I. Publications Pvt. Ltd, New Delhi.

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1. Four Year Undergraduate Programmes (FYUGP)
2. Subject: Geology(MD-3)
3. Semester: Third Semester
4. Course Name: Geology of North East India
5. Course Code: MD- GLG-3.1
6. Course level: 100
7. Credit:3(Th-2, Pract-1)

Course Outcome: *The students will be able to know the Preliminary idea about the Physiography of North-East India, Tectonic framework of North-East India. This course also emphasis on Stratigraphy and Economic importance of North-East India.*

In practical classes the students will be able to learn about the economic minerals of North-East India, oil and coal fields of North-East India and major tectonic features of North-East India. In the geological fieldwork the students will get the knowledge about the different rock exposures with their associated structures.

Syllabus showing each unit against class number and marks

Unit No.	Unit Content	Class hours	Credit/Marks
Unit-1	**Physiographical Outline of NE-India:** Preliminary idea about the Physiography of North-East India: Brahmaputra Plain, Sikkim-Arunachal Himalaya, Mishmi Hills, Naga-Patkai Range, Manipur Plain, Tripura-Cachar Belt, Meghalaya Plateau and Mikir Hills. Major drainage systems of North-East India. Tectonic framework of North-East India.	15	25

Unit-2	**Stratigraphy and Economic importance of North-East India:** Precambrian, Cretaceous and Tertiary of North-east India and their geological significance. Occurrence and distribution of economic mineral deposits in North-east India. Distribution of Coal and Petroleum in North-east India.	15	25
Unit-3	**Practical:** Identification of economic minerals of North-East India in hand specimen. Study of oil and coal fields of North-East India, Recognition of major tectonic features of North-East India on the map. Geological Field	30	15 10

Suggested Readings:

1. Geology of Assam by A.K. Biswas and A.B. Dasgupta.
2. Geodynamics of North East India and adjoining regions By D.R. Nandy
3. Fundamentals of Historical Geology and Stratigraphy of India. New AgeInternational Publishers Ltd.-New Delhi by Rabindra Kumar.