

Multidisciplinary papers in Geology

Multidisciplinary-1

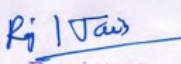
Type of Examination	Course Code and Nomenclature	Duration of Examination		Maximum Marks		Minimum Marks	
Theory	MDM GEL 51T-101 Introduction to Geology	CA	01 Hr	CA	20 Marks	CA	08 Marks
		EoSE	03 Hrs	EoSE	80 Marks	EoSE	32 Marks
Credit of the Course	4 (T-4)						
Course Objectives	This course is designed for students of all faculties to learn about the Geology subject, its different branches. Aim of this course to give idea about origin of our universe, Earth, and different endogenic and exogenic processes of earth. To learn about ancient life through fossils.						

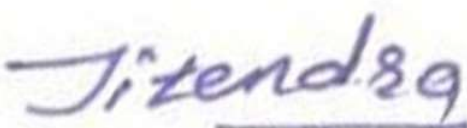
Unit- 1

Holistic understanding of dynamic planet 'Earth' through Geology. Introduction to various branches of Geology. General characteristics and origin of the Universe, Solar System and its planets. Meteorites.

Unit- 2

Origin, size and shape of Earth. Internal structures. constitution and composition of Earth. Concept of Sea-floor spreading, Continental drift and Plate Tectonics.


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Unit- 3

Geomorphology: Introduction, weathering and erosion, landform development and geological work of river, wind, groundwater, glacier and ocean. Introduction and types of Folds, Faults, Joints, Fractures.

Unit- 4

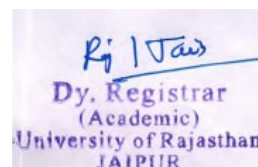
Definition, Scope, sub-division, and relationship of palaeontology with other branches. Fossilization and fossil record Nature and importance of fossil record; Fossilization processes and modes of preservation. Species Theory of organic evolution interpreted from fossil record.

Suggested books:

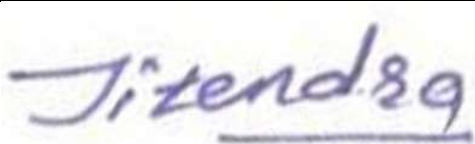
1. Mahapatra, G. B. 2018. Text book of Physical Geology, CBS publications
2. Thornbury, W. D., 2004. Principles of Geomorphology, CBS publisher & distributor private Ltd.
3. Huggett, R. J. 2007. Fundamental of Geomorphology, Taylor & Francis.
4. Paul R. B, and David R. M., 2013. Key Concepts in Geomorphology, W. H. Freeman.
5. Michael Benton, David A. T. Harper, (2009). Introduction to Paleobiology and the Fossil Record, Wiley Blackwell.
6. Clarkson, E. N. K. (2012). Invertebrate paleontology and evolution 4th Edition by Blackwell Publishing.
7. Ghosh, S.K. (1983). Structural Geology: fundamentals and modern developments, Elsevier.
8. Van Der Pluijm B. A., Marshak, S. 2004 Earth Structure (Second Eds.). WW Norton & Company.

Suggested E-resources:

1. <https://egyankosh.ac.in/simple-search?query=geology>
2. <https://www.digitalatlasofancientlife.org/>

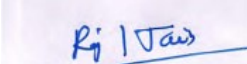


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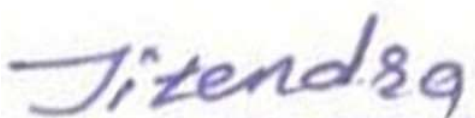
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Learning Outcome of the course: After successful completion of this course, the student will be able to:

1. Understand the basic concepts of Geology.
2. Scope of Geology and its relevance to the society.
3. Understand internal constituents and structure of the Earth.
4. Understand different endogenic earth processes in relation to dynamic processes of the earth.
5. Assess the mode of formation of landforms and their processes of formation in different climate zones and tectonic regimes.
6. Know about fossils and their significance in understanding the evolutionary history of life on the earth.



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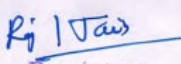
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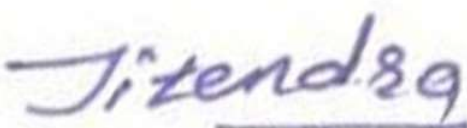
Multidisciplinary-2

Type of Examination	Course Code and Nomenclature	Duration of Examination		Maximum Marks		Minimum Marks	
		Theory	MDM GEL -63T 201 Introduction to Earth Materials and Geology of India	CA	01 Hr	CA	20 Marks
EoSE	03 Hrs			EoSE	80 Marks	EoSE	32 Marks
Credit of the Course	4 (T-4)						
Course Objectives	This course is designed for students of all faculties to learn about the origin and occurrence of different types of rock forming minerals, and rocks and a brief introduction of geology of India.						

Unit- 1

Definition of mineral, rock-forming, minerals. Physical and Optical properties of minerals. Physical, optical and chemical characteristics of following mineral groups: Feldspar, Garnet,


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Olivine and Silica. Pyroxene, Amphiboles, Mica, Carbonates, Kyanite, Sillimanite, Andalusite, Talc, Wollastonite, Oxides and Sulfides.

Unit- II

Definition, origin and composition of magma; intrusive and extrusive forms; structure and texture of plutonic, hypabyssal, and volcanic rocks. Bowen's Reaction Principle. Study of important igneous rocks- Granite and Basalt.

Unit- III

Common metamorphic rocks. Agents of metamorphism. Concept of facies. Common types of metamorphism.

Unit- IV

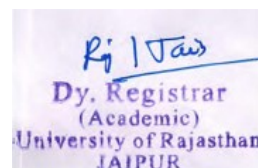
Introduction, origin of sedimentary rocks. Classification of sedimentary rocks. Occurrence and characteristics of common sedimentary rocks; Siliciclastic rocks (Conglomerates, sandstones, mudrocks), Carbonate rocks (limestone, Dolomite and dolomitisation). Introduction to Stratigraphy. Introduction to Geology of India.

Book Recommended

1. Klein, C., Dutrow, B., Dana, J. D., & Klein, C., 2002. Manual of mineral science. New York: Wiley.
2. Ford W.E., 2006. Dana's Textbook of Mineralogy. CBS Publishers and Distributors.
3. Tyrell, G.W., The principles of Petrology, Methuen & Co. London.
4. Winter, J.D., Principles of Igneous and Metamorphic Petrology, Pearson, Delhi.
5. Sam Boggs V th Edition (2016). Principles of Sedimentology and Stratigraphy.
6. Ramakrishnan M & Vaidyanadhan R 2010. Geology of India vol I and II, Geological society of India.
7. Brookfield M. E. 2005. Principles of Stratigraphy, Wiley Blackwell

Suggested E-resources:

1. <https://egyankosh.ac.in/simple-search?query=geology>



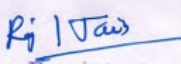
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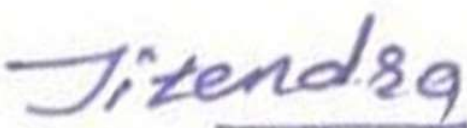
Learning Outcome of the course: After successful completion of this course, the student will be able to:

1. Understand about the different types of rock forming minerals
2. Understand about the magma generation and formation of igneous rocks.
3. Understand petrogenesis of igneous and metamorphic rocks.
4. Understand origin and types of sedimentary rocks.

Multidisciplinary-3

Type of Examination	Course Code and Nomenclature	Duration of Examination		Maximum Marks		Minimum Marks	
		Theory	MDM-GEL 75T-301 Applications of Geology	CA	01 Hr	CA	20 Marks
EoSE	03 Hrs			EoSE	80 Marks	EoSE	32 Marks
Credit of the Course	4 (T-4)						
Course Objectives	This course is designed for students of all faculties to learn about economic significance of geological studies through study of ore forming minerals, mining methods, exploration of mineral resources using remote sensing, and ground water studies.						


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Unit- I

Economic Geology, developments and its relationship with various branches of Geology. Ore and gangue minerals. Ore forming Processes. Common ore minerals and rocks. Strategic, essential and critical minerals. Coal, petroleum and radioactive minerals; their occurrences, distribution and origin-oil traps.

Unit- II

Common mining methods employed in India. Introduction to prospecting. Introduction to opencast and underground mining. Important industrial minerals: Mode of occurrence, physical properties, chemical composition and distribution in India

Unit- III

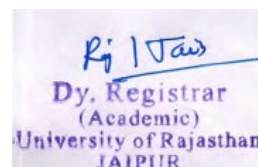
Introduction, definition and scope of remote sensing. Basic Principles of Remote Sensing: GIS: Definition & its Components, Hardwares and Softwares. Basics of Geographic Information Systems (GIS): Representation of Raster and Vector. Applications of remote sensing and Basic Geographic Information Systems (GIS) in geosciences.

Unit- IV


Origin of water and its importance. Hydrological cycle and occurrence of ground water and its distribution. Aquifer and types of aquifers. Hydrological properties of formation. Ground water management, traditional and rainwater harvesting.

Books Recommended:

1. Batman, A.M.: Introduction to economic mineral deposits.
2. Rao, T.C. and Gokhle, K.V.G.K.: Ore deposits of India, their distribution and processing.
3. Fundamentals of Remote Sensing: A Canada Centre for Remote Sensing Remote Sensing Tutorial



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4. Principles of Geographic Information Systems An introductory textbook Editor Rolf A. de By 2001.

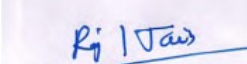
- 5. Groundwater Hydrology, Publisher: John Wiley & Sons Inc, [Todd David Keith](#) third edition.

Suggested E-resources:

1. <https://egyankosh.ac.in/simple-search?query=geology>

Learning Outcome of the course: After successful completion of this course, the student will be able to:

1. Understand ore forming processes.
2. Importance of mineral deposits for a country.
3. Understand the methods of mining.
4. Basics of remote sensing and applications of remote sensing.
5. Understand the ground water holding properties of rocks and occurrence of ground water.



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