

राष्ट्रीय शिक्षा नीति – 2020 आधारित

Choice Based Credit System (C.B.C.S.)

[ नियमावली: 2024–25 ]

3 YEARS UG PROGRAMME

3 YEARS UG (HONS.) PROGRAMME

4 YEARS UG (HONS.) PROGRAMME

4 YEARS UG (HONS. WITH RESEARCH) PROGRAMME

**Geology (Minor)**

Ist and 2nd Sem

[EFFECTIVE: 2024-25 ONWARDS]



महाराजा सुहेल देव विश्वविद्यालय, आजमगढ़

*Jeetu* *Ways*

Programme/Class: <b>Minor</b>		Year: <b>First</b>	Semester: <b>First</b>
<b>Subject: Geology</b>			
Course Code: B090101T		Course Title: <b>Physical and Structural Geology</b>	
<b>Course outcomes:</b> After completing the course, student Will learn origin of solar system and Earth Will understand internal structure of Earth Will understand interpretation stress-strain imprinted in earth Will learn the Interpretation of deformed structure Will understand role of weathering agents			
Credits: 6		Core: <b>Minor</b>	
Max. Marks: 100		Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 3-0-0			
Unit	Topics		No. of Lectures
<b>I</b>	Introduction to Geology and its scope, Earth and Solar system: origin, size etc., Age of Earth , Internal Structure and composition of Earth.		10
<b>II</b>	Sea-floor spreading; Basic concepts of Plate -Tectonics, Continental Drift		11
<b>III</b>	Weathering and erosion: factor, types, Erosion, transportation and deposition by wind and their related landforms.		12
<b>IV</b>	Erosion, transportation and deposition by rivers and glaciers, and their related landforms.		12
<b>V</b>	Basic idea about minerals and rocks; Introduction to structural geology; Dip and strike of beds; Forms of igneous bodies (concordant and discordant); Basic concepts of stress and strain		12
<b>VI</b>	Simple deformational structures: Fold morphology, their geometric and genetic classification, Top and Bottom of Beds		11
<b>VII</b>	Faults, Geometric and genetic classification of Faults (Normal, reverse and strike-slip faults); Causes of Fault; Recognition of faults in the field.		10
<b>VIII</b>	Unconformities: their classification and geological significance, Joint and its classification, Lineation and Foliation: basic introduction.		12

**Suggested Readings:**

1. The Blue Planet: An Introduction to Earth System Science – B.J. Skinner and S.C. Porter. 1995, John Wiley & Sons, Inc. 493p.
2. Introduction to Physical Geology – G.R. Thompson and J. Turk. 1998, Saunders College Publishers, Fort Worth. 371p.
3. Processes that Shape the Earth – D.M. Thompson. 2007, Infobase Publishing, NY. 116p.
4. Physical Geology – L.D. Leet, S. Judson and M.E. Kauffman, (1982). Prentice-Hall Inc. 629p.
5. Holme's Principles of Physical Geology – P.MvL.D. Duff, Fourth Edition (1993). Stanley Thornes (Publishers) Ltd.
6. Bailey, B., 1992. Mechanics in Structural Geology, Springer.
7. Davis, G. H. and Reynolds, S. J., 1996. Structural Geology of rocks and regions, John Wiley. and Sons.
8. Ghosh, S. K., 1993. Structural Geology: Fundamentals, and modern developments, Pergamon Press.
9. Leyson, P: R. and Lisle, R. J., 1996. Stereographic projection techniques in structural geology, Cambridge

Programme/Class: <b>Minor</b>		Year: <b>First</b>	Semester: <b>Second</b>
Subject: <b>Geology</b>			
Course Code: B090201T		Course Title: <b>Mineralogy and Crystallography</b>	
Course outcomes: After completing the course, student Will learn the mineral and its types Will understand the crystal formation, form and occurrence Will learn formation of mineral groups and resources			
Credits: 6		Core: <b>Minor</b>	
Max. Marks: 100		Min. Passing Marks: as per rules	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 3-0-0			
Unit	Topics		No. of Lectures
I	Crystal, crystal growth and crystallisation; Laws of crystallography; Crystal morphology; Crystallographic axes and axial angles; Elements of symmetry.		10
II	Crystallographic notations; Crystal forms; Habit and classification; Crystal aggregate: Twinning and common twin laws.		11
III	Symmetry and forms of Hexagonal (beryl type and calcite type), Orthorhombic (Barytes type), Monoclinic (Gypsum type), and Triclinic (Axinite type) Crystal Systems		12
IV	Symmetry and forms of Cubic (Galena type, Pyrite type and Tetrahedrite type), and Tetragonal (Zircon type) Crystal Systems		12
V	Definition of mineral; Atomic bonding; Physical properties of minerals: colour, lustre, form, isomorphism, pseudomorphism, polymorphism, hardness, fracture, cleavage, specific gravity, and characters based on heat, electricity and magnetism;		12
VI	Physical properties, chemical composition, occurrences, and uses of minerals belonging to the Silica and Feldspar families, and clay minerals		11
VII	Physical properties; chemical composition, occurrences, and uses of Pyroxene, Olivine, Mica and Garnet families; Amphibole,		10
VIII	Nicol prism; Optically isotropic and anisotropic minerals; Polarisation of light; Optical properties of minerals under polarised light and crossed polars: refractive index, pleochroism, relief, twinkling, birefringence, interference colours, extinction and twinning; Classification of minerals into uniaxial and biaxial minerals		12

**Suggested Readings:**

1. Putnis A. 1992. Introduction to Mineral Sciences, Cambridge publication.
2. Cornelis Klein and Barbara Dutrow, 2007, The manual of Mineral Science, Wiley Publication
3. Mason, B., 1986. Principles of Geochemistry. 3 rd Edition, Wiley New York.
4. Rollinson H. 2007 Using geochemical data-evaluation. Presentation and interpretation. 2 nd Edition. Publisher Longman Scientific & Technical.
5. Walther John, V., 2009 Essentials of Geochemistry, student edition. Jones and Bartlett Publishers.
6. Albarede, F, 2003. An introduction to geochemistry. Cambridge University Press.