

DISCIPLINE SPECIFIC CORE COURSE3 (DSC-3)- Concepts of Stratigraphy (L3, P1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-3 Concepts of Stratigraphy (L3, P1)	4	3	0	1	12th pass with science	

Learning Objectives

This course on concepts of stratigraphy aims to inculcate the knowledge on basic principles of stratigraphy; define the concept of rock strata and its various forms. It will try to make the students understand difference between rock-unit and time unit, Concept of Geological Time Scale, Age of rock (fossil data, geochronology). Further the objective is to generate skill amongst students to distinguish between different stratigraphic principles and their applications; Lithostratigraphy, Biostratigraphy, Magnetostratigraphy etc. The course attempts to prepare students apply the stratigraphic principles in surface and subsurface for understanding geodynamic processes in the planet Earth and to prepare students apply the acquired knowledge for exploration of natural resources.

Learning outcomes

After successful completion of this course, students will be able to comprehend i) distribution of sedimentary rocks in time and space, ii) principles of different branches of stratigraphy and their distinctiveness, correlatability. Students will be able to apply the stratigraphic principles in both Precambrian and Phanerozoic strata. Students will also be able to compare between different stratigraphic principles and identify the contrast in interpretation based on different principles. Through application of acquired knowledge in geological successions students will be able to develop/ compose template for exercise of stratigraphy in rock strata of different lithology and geological ages.

SYLLABUS OF DSC-3

Credits 4

Theory 45 hours

Unit 1:

(9 hours)

Detailed content

Principles of stratigraphy, geological time scale, Stratigraphic units: lithostratigraphic, chronostratigraphic and biostratigraphic units.

Unit 2:

(9 hours)

Detailed content

Stratigraphic classification and correlation. Methods of collecting stratigraphic data, identification of stratigraphic contacts and unconformities. Facies concept in stratigraphy. Applications of lithostratigraphy

Unit 3:

(9 hours)

Detailed content

Fossils and stratigraphy; Evolutionary trends, Biozones and zone fossils. Biostratigraphy in relation to other stratigraphic techniques.

Unit 4:

(9 hours)

Detailed Content

Radiometric dating (K-Ar, Rb-Sr, U-Pb) and correlation techniques. Basic principles of magnetostratigraphy, seismic stratigraphy and sequence stratigraphy.

Unit 5:**(9 hours)**

Detailed content

Concept of Stratotypes. Global Stratotype Section and Point (GSSP). International and Indian code for stratigraphic classification.

Practical (30 hours)

Preparation and study of stratigraphic maps: Correlation diagrams using lithologs of fossiliferous and non-fossiliferous stratigraphic units. Geophysical logs. Examination of isopach and isofacies maps. Exercises related to stratigraphic classification and correlation.

Essential readings

Blatt, H., Berry, W.B. and Brande, S., 1991. Principles of stratigraphic analysis. Blackwell scientific publications, Oxford

Nicols G., 2009 Sedimentology and Stratigraphy 2nd Edition, Wiley-Blackwell

Brookfield, M.E., 2016 Principles of stratigraphy, Wiley India

Fundamentals of Historical geology and stratigraphy of India, Ravindra Kumar

Suggestive readings

Blatt, H., Berry, W.B. and Brande, S., 1991. Principles of stratigraphic analysis. Blackwell scientific publications, Oxford Annexure-III Page 24 of 25

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