

DISCIPLINE SPECIFIC CORE COURSE (DSC-8): Sedimentary Geology (L3, P1)

Credit distribution, Eligibility and Prerequisites 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-8) Sedimentary Geology (L3, P1)	4	3	0	1	12 th pass with science	Studied Stratigraphy, Earth System Science or Equivalent

Learning Objectives

Objective of this course is to provide basic knowledge to students about sediment origin, sediment transport, and deposition al history. Attempt will be made to make students understand the processes that transform sediments in to sedimentary rocks. Distribution of sedimentary rocks (siliciclastic and carbonate) in space and time will be discussed

Learning outcomes

After going through this course, students will learn and develop skills to appreciate the concepts of weathering and sedimentary flux, basic concepts of sediment transport and formation of sedimentary structures, grain size scales and analysis. Students will be able to understand about sedimentary facies, classification of sedimentary rocks, sedimentary environments and provenance. Students will alost be able to appreciate how sedimentary rocks are formed from sediments.

SYLLABUS OF DSC- 8

Credit-4

Theory (45 hours),

Practical (30 hours)

UNIT – I (9 hours)

Detailed contents

Introduction to Sedimentary Geology: Geology and Chemistry of weathering processes. Sediments: origin, transportation, deposition, consolidation and diagenesis

UNIT – II (9 hours)

Detailed contents

Sediment granulometry: Grain size scales Udden-Wentworth and Krumbein (phi) scale, particle size distribution; mean, median, mode, standard deviation, skewness. Environmental connotation. Classification of sedimentary rocks

UNIT – III (9 hours)

Detailed contents

Sedimentary texture and structure: Sedimentary fabric, textures, Porosity and permeability. Sedimentary structures: Syn-sedimentary, Penecontemporaneous

UNIT – IV (9 hours)

Detailed contents

Ichnofossils: Sediment-organism interaction, Environmental interpretation with help of ichnofossils
Depositional controls and Diagenesis: Tectonics and Climate Diagenesis of terrigenous and chemical sediments

UNIT – V (9 hours)

Detailed contents

Sedimentary facies and environment: Concept of sedimentary facies, facies association, paleoenvironment and paleocurrent analyses. Introduction to sedimentary environment: aeolian, glacial, fluvial, near-shore and deep-marine environments. Introduction to carbonate rocks: classification

Practical Component- (30 Hours)

Study of megascopic characters of major sedimentary rocks:

Sketching of primary sedimentary structures in laboratory and museum specimen: ripple marks, cross beddings, sole marks, biogenic structures.

Microscopic study of textures and diagenetic features in sedimentary rocks:

Essential/recommended readings

Prothero, D.R., and Schwab, F. 2003. Sedimentary Geology. Freeman & Co.

Boggs Sam Jr. 1995. Principles of Sedimentology and Stratigraphy, Prentice Hall

Suggestive readings (if any)

Prothero, D.R., and Schwab, F. 2003. Sedimentary Geology. Freeman & Co.

Boggs Sam Jr. 1995. Principles of Sedimentology and Stratigraphy, Prentice Hall.

Stanley, S. M. 1985. Earth and Life through time. Freeman & Co.

Tucker, M., 1988 Techniques in sedimentology Blackwell scientific publications

Nicols, G., 2009 Sedimentology and Stratigraphy Wiley-Blackwell