

BACHELORS WITH GEOLOGY AS MAJOR

3rd SEMESTER

CREDITS: THEORY: 4, PRACTICAL: 2

GLY322J: GEOLOGY _ SEDIMENTOLOGY

Objective/Expected learning outcomes

Upon studying this course, the students will gain an understanding of the processes involved in the formation of sedimentary rocks, their textures, structures, classifications and their importance. They will also be able to identify primary and secondary sedimentary structures and their depositional environments. Upon completion of this course, students will be able to identify sedimentary rocks and their depositional environments with stratigraphic sequence aspects.

UNIT -1 (15 HOURS)

Introduction to sedimentology: Origin of sediments. Grain size, concept and scale. The process involved in the formation of sedimentary rocks: erosion, transportation, deposition, and lithification. Sedimentary Textures, structures and environment. Primary and syn-sedimentary structures

UNIT -2 (15 HOURS)

Basic Hydraulics: sediment transport mechanism, Fluid flow: flow regime, laminar and turbulent flow. Mass flow types and deposits. Particle entrainment, transport and deposition. Paleocurrent analysis: data acquisition, methodology, different palaeocurrent patterns.

UNIT -3 (15 HOURS)

Siliciclastic rocks: components and classification(s) of conglomerates, sandstones, mudrocks. General introduction to carbonate rocks, BIF, chert; Components and classifications of limestone, dolomites and dolomitisation.

UNIT -4 (15 HOURS)

The elementary idea on sedimentary facies and environment. Classification of sedimentary facies. Facies models for glacier, meandering, fluvial, deltaic, and shelf depositional settings. Diagenesis, Concepts of Diagenesis, Stages of diagenesis, Compaction and cementation.

PRACTICAL (2 CREDITS: 60 HOURS)

Identification of sedimentary structures in hand specimens. Statistical analysis of particle size distribution. Paleocurrent analysis. Petrographic study of clastic and non-clastic rocks in thin sections. Field visit for identification of various sedimentary structures.

BOOKS RECOMMENDED

Allen, J.R.L. (1985). Principles of Physical Sedimentology. George Allen and Unwin, London. Prothero, D. R. and Schwab, F. (2004). Sedimentary geology. Macmillan.

Tucker, M. E. (2001). Sedimentary Petrology, Third Edition Blackwell Science.

Collinson, J. D. and Thompson, D. B. (1988). Sedimentary structures. Unwin- Hyman, London. Nichols, G. (2009). Sedimentology and Stratigraphy. Second Edition. Wiley Blackwell.

Folk, R. L. (1974). Petrology of Sedimentary Rock. Hemphill Publishing Company, Austin, Texas.