Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NGLC504	**Applied Sedimentology**	3	0	0	3

Course Objective
In this course the students will study the fundamental concepts, principles and applications of sedimentology.
Learning Outcomes
Upon completion of the course, students will be able to: • Identify and study various types sedimentary rocks in field and under microscope • Can understand the difference between various types of sedimentary rocks such as sandstones, shale, conglomerates and carbonates • Understand various types of sedimentary structures and their geological significance • Understand various types of sedimentary depositional environments and their importance for hydrocarbon systems, ore deposits and groundwater accumulation

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Nature and origin of sedimentary rocks, its significance, composition and classification. Earth surface processes, Sediment transport in different systems.	4	Process of formation of various types of sedimentary rocks
2	Texture of sediments: Particle size of detrital rocks, definition, measurement, size parameters, grain size distribution and causal factors, grain size distributions and environmental analysis, Sphericity and roundness, packing and fabric, porosity and permeability. Mathematical treatment of grain size data	2	Texture of sedimentary rocks and its geological significance
3	Sedimentary structures and their genetic significance and importance in rock record, Biogenic structures	8	Sedimentary structures and its geological significance
4	Palaeocurrent analysis: vector properties and palaeocurrent, scalar properties and palaeocurrent, presentation and interpretation of palaeocurrent data	1	Principles and applications of palaeocurrent data in sedimentary rocks
5	Petrology of important clastic (sandstone, shale, conglomerate and breccia) and non-clastic (carbonates) rock groups	4	Understand the difference between various types of sedimentary rocks such as sandstones, shale, conglomerates and carbonates
6	Provenance studies: methodology and significance, paleoclimatic and paleoenvironmental analysis.	2	Understand the provenance of sediments
7	Classification of environments, environmental parameters, Sedimentary facies analysis; its importance in paleoenvironmental reconstruction	15	Understand various types of depositional environments
8	Tectonic control of sedimentation. Evolution of sedimentary basins	2	Effect of tectonism on sedimentary rocks
9	Diagenesis; changes in mineralogy, fabric and chemistry: mudstones, sandstones, carbonate rock	2	Effect of diagenesis on sedimentary rocks
10	Cyclic sediments: Seismic and sequence stratigraphy	2	Introduction to seismic and sequence stratigraphy and its importance
	total	42	

Reference Books:

1. Nichols, G., 2009. Sedimentology and stratigraphy. John Wiley & Sons.
2. Selley, R.C., 2000: Applied Sedimentology, Academic Press, 523pp.
3. Boggs, S., 2012. Principles of sedimentology and stratigraphy.
4. Allen, J., 2012. Principles of physical sedimentology. Springer Science & Business Media.
5. Pettijohn, F.J., 1975. Sedimentary rocks (Vol. 3, p. 628). New York: Harper & Row.

Other References:

1. Reading, H.G., 1978: Sedimentary Environment and Facies, Elsevier, 557pp
2. Reineck, H.E. and Singh, I.B., 1973: Depositional Sedimentary Environment, Springer-Verlag, 439pp.
3. Sengupta, S.M., 2007: Introduction to Sedimentology, CBS publisher, 314pp.