16PL201 FUNDAMENTALS OF GEOLOGY

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P
45	15	-

WA/RA	SSH/HSH	CS	SA	S	BS
8	60	-	10	-	-

Course Description and Objectives:

This basic course in general geology is designed to train the students to understand the basics of geology, viz: formation of earth, layers of earth, diverse types of rocks, formation of sedimentary basins and the micro fossils and their relationship to oil and gas.

Course Outcomes:

The student will be able to:

- Discern the dimension of earth structure, composition, origin of earth, formation of earth. It deals essence of scientific studies dealing with the origin, age, structure of the earth and with the evolution, modification, and extinction of various surface and subsurface physical features.
- Understand the land forms as geomorphology, physiography and to gain a better perspective conforming to the present day thinking on the aspects of geology.
- Be impressed by the fact that the subject is not static and will more likely keep his mind open to innovative ideas.

SKILLS:

- Understand the origin of various kinds of igneous, sedimentary, metamorphic rocks that can be understood in terms of their tectonic setting.
- Gain the knowledge on fundamentals of sedimentary basins and paleontology and their significance to the petroleum industry.

ACTIVITIES:

- *Understands the land forms*
- *Identification of Various kinds of rocks.*

UNIT - 1 **L-9**

Dimensions of earth structure, composition & origin of an earth, envelops of the earth- crust, mantle, core Internal dynamic process- Plate tectonics- Continental drift, Earthquake and Volcanoes, External dynamic process- weathering, erosion and deposition.

UNIT - 2 **L-10**

Fundamental concepts in Geomorphology-geomorphic processes distribution of landforms-drainage patterns –development, Landforms in relation to rocks types, paleochannels, buried channels.

UNIT - 3 **L-9**

Geological work of rivers, wind, ocean, glaciers and the landforms created by them. Identification of different structural features encountered in oil exploration viz: joints, faults, folds, unconformities.

UNIT - 4 **L-8**

Origin of igneous, sedimentary and metamorphic rocks. Sedimentary structures-petrographic character of conglomerate, sandstone, shale, limestones. Introduction to sedimentary basins and deltaic systems; Topographic maps, Thematic maps, Topographic and Thematic profiles.

UNIT - 5 L-8

Paleontology: Introduction to Paleontology, Fossils and Fossilization. Micropaleontology - Palynology: Distribution of microfossils-Foraminifera, Radiolaria, Conodonts, Ostracodes, Diatoms; Importance of micro fossils in oil exploration.

TEXT BOOKS:

1. Engineering Geology,Bell, F.G., 2nd Edition, ButterworthHeimann,2007.
2. Text book of Geology, Mukharjee, P.K., The World Press Pvt. Ltd., 2005

REFERENCE BOOKS:

1. Elements of Mineralogy, Gribble, C. D., Rutley's, 27th Edition. CBS Publishers, 2005.
2. Principles of Physical Geology, David Duff, Homes, Nelson Thornes Ltd; 4th Revised edition, 1992.
3. Text Book of Physical Geology, Mahapatra, G.B., CBS Publishers, 2002.
4. Principles of Engineering Geology, Bangar, K.M., 2nd Edition, Standard Publishers, 2009.