COURSE TITLE	**PETROLEUM GEOLOGY**
COURSE CODE	**01CH0410**
COURSE CREDITS	**3**

Objective:

1 The primary objective of the course is to introduce the students with the geochemical, origin and accumulation aspects of hydrocarbons. Depositional environment of sediments, their stratigraphic positions, exploration using microfossils also included in this course for better understanding.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the phenomenon of migration of petroleum
2 State the chemical and physical properties of hydrocarbons
3 Classify hydrocarbon traps and geological structures
4 Analyze the hydrocarbon system

Pre-requisite of course: Basic knowledge of thermodynamics, material and energy balances

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Petroleum** Different states of natural occurrence, Basic concepts of organic geochemistry, Origin of petroleum, Geochemistry and maturation of kerogen; Biogenic and Thermal effect. Distribution of Petroleum in space and time	8
2	**Introduction to migration of oil and gas:** Geologic framework of migration; short and long-distance migration, primary and secondary migration; geologic factors controlling hydrocarbon migration, forces responsible for migration, migration routes and barriers., Oil field water- characters and classifications.	10
3	**Reservoir rocks:** General attributes and petrophysical properties., Classification of reservoir rocks - Clastic and Carbonate reservoirs, A brief account on Reservoir Characterization, Blowout problem	10

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Contents : Unit	Topics	Contact Hours
4	**Hydrocarbon traps** Definition; classification of hydrocarbon traps - structural, stratigraphic and combination, time of trap formation and time of hydrocarbon accumulation, Cap rocks - definition and general properties	10
Total Hours		**38**

Textbook :

1 Petroleum Geology, North F. K., Allen & Unwin Inc., 1985

References:

1 Petroleum Formation and Occurrence, Petroleum Formation and Occurrence, Tissot, B. P., and Welte, D. H., Springer, 2013

2 Elements of Petroleum Geology, Elements of Petroleum Geology, Selley, R. C., Academic Press, 1995

3 Elements of Petroleum Geology, Elements of Petroleum Geology, Selly, R. C. and Sonnenberg, S. A., Elsevier, 2014

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
30.00	30.00	20.00	20.00	0.00	0.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

1 http://nptel.ac.in

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