PETROLEUM REFINING: CHARACTERIZATION, ANALYSIS AND SEPARATION
(Elective-1)

Course Code: 13CH2106

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Course Educational Objectives:

This course introduces

1) History of petroleum
2) The panorama of petroleum refining industries in India and the World.
3) Operations involved in petroleum refining.

Course Outcomes:

After completion of the course the student will be able to

1) Do characterization and analysis of products obtained from petroleum refining
2) Learn the fractionation of petroleum.
3) Understand the treatment techniques of petroleum fractions.

UNIT-I

Past present scenario in petroleum refining Industry in India and World. Origin and formation of petroleum. Composition of petroleum products.

UNIT-II

Characterization of crude, TAN Number, API Gravity, UOPK factor. Characterization of gasoline, diesel, Kerosene, Aviation Turbine fuel (ATF), Bitumen, Thermal properties of petroleum fractions.

UNIT-III

Dehydration and desalting of crudes. Crude pipe still heater. Design of atmospheric distillation column and vacuum distillation column. Various distillation products and their relation to composition.

UNIT-IV

Impurities in crude and petroleum products, treatment of LPG, gasoline, kerosene and lubes.

UNIT-V

Thermal conversion processes visbreaking and delayed coking

Future fuels: Alternative fuels, Bio fuels, fuel cell Science and Technology.

TEXTBOOKS:

1. Baskara Rao B.K, *"Modern Petroleum Refining Processes*", 4th Edition, Oxford & IBH Pub. Co. Pvt.Ltd. 2002.

2. Baskara Rao B.K, *"A Text on Petrochemicals",* Khanna Publishers, 2002.

REFERENCES:

1. Nelson W.L, *"Petroleum Refinery Engineering",* McGraw Hill, New York 1961.

2. Hengstebeck R.J, *"Petroleum Refining",* McGraw Hill, New York 1959.

3. Steiner H, Pergamon, *"Introduction to petroleum Chemical Industry",* London, 1961.

4. Sern V.Y, Pergamon, *"Gas phase oxidation",* London, 1964.

5. Waddams A.L., *"Chemicals from Petroleum",* 4 Rev Ed, John MurrayPub. 1978.

6. KNIEL, WINTER & STOCK *"Ethylene Derivatives",* Marcell DekkerPublishers.

7. Sinha N K, *"Petroleum Refining and Petrochemical"*, Umesh Pub. 2003.

8. Sharma B.K., *"Fuels and Petroleum Processing"*, Goel Pub. House, 1998.

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