

**PETROLEUM REFINING: CHARACTERIZATION,
ANALYSIS AND SEPARATION**

(Elective-II)

Course Code: 15CH2108

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Course outcomes: On successful completion of the course, the student should be able to

CO1: Recognize the Indian and global petroleum refining scenario.

CO2: Classify various Crudes and understand their testing methods.

CO3: Classify the various pre- processing operations of crude like dehydration & distillation.

CO4: Recognize the various petroleum products like LPG, kerosene, Lube oils.

CO5: Explain the various cracking & coking processes.

UNIT-I (10-Lectures)

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

UNIT-II (10-Lectures)

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 (10-Lectures)

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 (10-Lectures)

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

UNIT-V (10-Lectures)

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 Dekker Publishers.
7. Sinha N K, “*Petroleum Refining and Petrochemical*”, Umesh Pub. 2003.
8. Sharma B.K., “*Fuels and Petroleum Processing*”, Goel Pub. House, 1998.