

**PETROLEUM REFINING AND  
PETROCHEMICALS  
(Professional Elective-II)**

**COURSE CODE:15CH1124**

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**COURSE OUTCOMES:**

At the end of the course the student shall be able to

- CO 1** Discuss the origin, formation and composition of crude oil & their test methods.
- CO 2** Recognize the importance of dehydration of crude and distillation operation.
- CO 3** Describe the importance of thermal and catalytic cracking.
- CO 4** Classify the feed stocks for production of chemicals from methane.
- CO 5** Classify the chemicals that can be obtained from Ethane, Ethylene and Acetylene.

**UNIT-I (10 LECTURES)**

**ORIGIN, FORMATION AND COMPOSITION OF PETROLEUM:**

Origin and formation of petroleum, Reserves and deposits of world, Indian Petroleum Industry.

**PETROLEUM PROCESSING DATA:**

Evaluation of petroleum, thermal properties of petroleum fractions, important products, properties and test methods.

**UNIT-II (10 LECTURES)**

**FRACTIONATION OF PETROLEUM:**

Dehydration and desalting of crudes, heating of crude pipe still heaters, distillation of petroleum, blending of gasoline.

**TREATMENT TECHNIQUES:**

fraction-impurities, treatment of gasoline, treatment of kerosene,

treatment of lubes.

### UNIT-III

(10 LECTURES)

#### THERMAL AND CATALYTIC PROCESSES:

Cracking, catalytic cracking, catalytic reforming, Naphtha cracking, coking, Hydrogenation processes, Alkylation processes, Isomerization process.

### UNIT-IV

(8 LECTURES)

Petrochemical Industry – Feed stocks

#### CHEMICALS FROM METHANE:

Introduction, production of Methanol, Formaldehyde, Ethylene glycol, PTFE, Methylamines

### UNIT-V

(12 LECTURES)

Chemicals from Ethane-Ethylene-Acetylene: Oxidation of ethane, production of Ethylene, Manufacture of Vinyl Chloride monomer, vinyl Acetate manufacture, Ethanol from Ethylene, Acetylene manufacture, Acetaldehyde from Acetylene.

#### TEXT BOOKS:

1. Nelson. W.L. “Petroleum refining Engineering”, 4th Edition, Mc Graw Hill, New York, 1969.
2. Rao, B.K.B. “Modern Petroleum Refining Processes”, 4th Edition, Oxford and IBH Publishing, 2002.

#### REFERENCES:

1. Goldstine. R.F. “The Petroleum Chemicals Industry”, Taylor and Francis, London, 1967.
2. Gruese. W.S. and Stevens, D.R. “Chemical Technology of Petroleum”, McGraw Hill, 1980.
3. Chauvel. A. and Lefevrev, “Petro Chemicals”, Volume 1 and 2, Gulf Publishing company 1989.
4. James G. Speight, Baki Ozum ‘ Petroleum Refining Processes’ CRC Press, 2001.

