

UCH850: PETROLEUM AND PETROCHEMICALS

L	T	P	Cr
3	0	0	3.0

Course Objectives:

To impart knowledge of petroleum refining, hydrocarbon processing, and derived petrochemicals.

Introduction: World petroleum resources, Petroleum industries in India, Chemistry and composition of crude oil, Transportation and pretreatment of crude oil, New trends in refinery.

Classification and Characterization: Classification of petroleum, Characterization of petroleum fractions.

Crude oil distillation: Impurities in crude oil, Desalting of crude oil, Atmospheric distillation and vacuum distillation units.

Conversion Processes: Thermal conversion processes, Conventional vis-breaking and soaker visbreaking process, Coking processes, Catalytic conversion processes, Fluid catalytic cracking, Catalytic reforming, Hydrocracking, Catalytic alkylation, Catalytic isomerization and catalytic polymerization.

Finishing Processes: Sulphur conversion processes, Sweetening processes, Solvent extraction process, Hydrotreating process.

Lube oil manufacturing Processes: Solvent extraction of lube oil fractions, Manufacture of petroleum wax, Hydrofinishing process.

Petrochemicals: Primary petrochemicals such as ethylene, propylene, butadiene, benzene, toluene, xylene and their derived polymers.

Course Learning Outcomes (CLO):

Upon completion of this course, the students will be able to:

1. select the appropriate characterization parameters.
2. specify the properties of petroleum products.
3. attain knowledge of various separation & conversion processes involved in petroleum refining.
4. attain knowledge of manufacturing of various petrochemical products.

Text Books:

1. Bhaskara Rao, B.K. *Modern Petroleum Refining Processes*. Oxford & IBH Publishing Company Pvt. Ltd. New Delhi, (2007) 3rd Ed.

2. Prasad, R. *Petroleum Refining Technology*, Khanna Publishers, (2011) 1st Ed.
3. Mall, I.D. *Petrochemical Process Technology*, Mecomillan Publishers, (2006) 1st Ed.

Reference Books:

1. Nelson, W. L. *Petroleum Refinery Engineering*, Tata McGraw Hill Publishing Company Limited, (1958) 4th Ed.
2. Garry, J.H. *Petroleum Refining Technology and Economics*, Marcel Dekker Inc., (2001) 4th Ed.
3. Wells G. M. *Handbook of petrochemicals and processes*, Ashgate Publishing Ltd, (1999) 2nd Ed.
4. Spitz P. H. *Petrochemicals: The rise of an industry*, John Wiley & Sons, (1999).
5. Sarkar, G.N. *Advanced Petroleum Refining*, Khanna Publishers, (2000).

Evaluation Scheme:

S. No.	Evaluation Elements	Weightage (%)
1	MST	30
2	EST	50
3	Sessional (May includes seminar/ assignments/ quiz's etc)	20