

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA



LESSON PLAN

**SUBJECT-PETROLEUM REFINING AND PETROCHEMICAL
TECHNOLOGY**

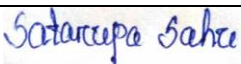

DEPARTMENT OF CHEMICAL ENGINEERING

WEEK	Topics covered
WEEK 1	Development of petrochemical industry in India
	Growth of petrochemical industry in India
	Define petrochemicals & describe the importance of petrochemical industry
	Theories on Origin of petroleum
	Detection and production of petroleum
	Pre-treatment of oil before refining, desalting and stabilisation of crude
	Classification and composition of petroleum
WEEK 2	Transportation of crude oil for refining
WEEK 3	Cracking-Principle, necessity and types of cracking
	Reaction and parameters in thermal cracking
	Reaction and parameters in pyrolysis
	Reaction and parameters in visbreaking
	Reaction and parameters in coking
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WEEK 4	Catalytic cracking process, parameters, process in different catalytic crackers
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	Thermal reforming
	Catalytic reforming
	Polymerisation, Alkylation and isomerisation
WEEK 5	Product from a petroleum refinery
	Temperature range and uses of petroleum products
	Crude oil distillation system- Operation in Single stage distillation units
	Crude oil distillation system- Operation in Two stages distillation units

	Crude oil distillation system- Operation in vacuum distillation column
	Crude oil distillation system- Operation in Atmospheric distillation column
	Crude oil distillation system- Operation in Three stages distillation units
	Crude oil distillation system- Operation in Three stages distillation units
WEEK 6	Flow diagram of an integrated petroleum refinery
	Safety, storage of Petrochemical Products
	Handling of Petrochemical Products
	Overviews of Refineries in India
	History of Petrochemical industries globally and in India
	Growth of Petrochemical industries globally and in India
	Petrochemical feed stock- category
WEEK 7	Petrochemical feed stock- composition
	Petrochemical feed stock- source
	Process flow-sheet of Steam reforming of naphtha
	Process description of Steam reforming of naphtha
	Process flow-sheet of Separation of C4 cuts from naphtha crackers
	Process description of Separation of C4 cuts from naphtha crackers
	Industrial method of cyclohexane manufacturing
WEEK 8	Process flow-diagram for manufacturing of methanol from synthesis gas
	Process description for manufacturing of methanol from synthesis gas
	Manufacturing of ethanol from synthesis gas
	Manufacturing of vinyl monomer(vinyl chloride)
	Manufacturing of vinyl monomer(vinyl acetate)
	Manufacturing of vinyl monomer(Acrylonitrile)
	Manufacturing of Polyester monomer(Terephthalic acid)
	Process flow-diagram for Manufacturing of Phthalic Anhydride
	Process description for Manufacturing of Phthalic Anhydride
	Revision of the chapter
	Manufacturing of formaldehyde
	Manufacturing of acetaldehyde
	Manufacturing of Acetic acid
	Manufacturing of BTX(Benzene)
WEEK 9	Manufacturing of BTX(Toluene)
	Manufacturing of BTX(Xylene)
	Manufacturing of Aniline
	Manufacturing of Melamine

BOOKS FOR REFERENCE:

- Modern Petroleum Refining Process by B K B Rao, Oxford IBH Publication
- Petroleum Refining Technology by Dr. Ram Prasad, Khanna Publications
- Fuels And Petroleum Processing by B.K Sarma, Goel Publication.

	Prepared by	Approved by
Signature		
Name	Satarupa Sahu	SOVAN KUMAR SAHOO
Designation	Lecturer	HOD, Chemical.
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