

GOVERNMENT POLYTECHNIC JAGATSINGHPUR

**CHEMICAL ENGINEERING DEPARTMENT
LESSON PLAN**

Discipline :- CHEMICAL	Semester:- 6th	Name of the Teaching Faculty Dr. SUSHANTA KUMAR BEHERA
Subject:- Petroleum Refining & Petrochemical Technology	No of Days/per Week Class Allotted :- 04	Semester From:- January To:- May
Course Code: TH 3		
Week	Class Day	Theory/ Practical Topics
1 st	1 st	CHAPTER-1: INTRODUCTION TO PETROLEUM INDUSTRIES Introduction to petroleum
	2 nd	Define petrochemicals & describe the importance of petrochemical industry
	3 rd	Theories on Origin of petroleum,
	4 th	Pre-treatment of oil before refining,
2 nd	1 st	desalting and stabilization of crude
	2 nd	Classification and composition of petroleum
	3 rd	detection and production of petroleum
	4 th	Pre-treatment of oil before refining
3 rd	1 st	Transportation of crude oil for refining
	2 nd	CHAPTER-2: FRACTIONATION OF CRUDE PETROLEUM OIL Introduction
	3 rd	Principles of Cracking, necessity and types of cracking
	4 th	Reaction and parameters in thermal cracking
4 th	1 st	pyrolysis, visbreaking and coking
	2 nd	Catalytic cracking process, parameters, process in different catalytic crackers
	3 rd	Thermal and catalytic reforming
	4 th	Polymerization, Alkylation and isomerization
5 th	1 st	CHAPTER-3: PETROLEUM REFINING Introduction
	2 nd	Product from a refinery, temperature range and composition of crude oil
	3 rd	Uses of petroleum products
	4 th	Crude oil distillation system
6 th	1 st	Desalting of crude oil
	2 nd	Operation of distillation column
	3 rd	Two stages distillation units
	4 th	Operation of Three stages distillation units
7 th	1 st	Flow diagram of an integrated petroleum refinery
	2 nd	Safety, storage and handling of Petrochemical Products
	3 rd	Overviews of Refineries in India

	4 th	CHAPTER-4: CHEMICAL FEED STOCK-FIRST GENERATION PETROCHEMICALS History and growth of Petrochemical industries globally and in India
8 th	1 st	Petrochemical and different chemicals from petroleum
	2 nd	Petrochemical feed stock- category
	3 rd	composition and sources of naphtha
	4 th	Process of Steam reforming of naphtha
9 th	1 st	Separation of C4 cuts from naphtha crackers
	2 nd	Industrial method of cyclohexane manufacturing
	3 rd	Application of cyclohexane
	4 th	CHAPTER-5: SECOND GENERATION PETROCHEMICALS Introduction
10 th	1 st	Differentiate between first and second generation petrochemical
	2 nd	Manufacturing of methanol from synthesis gas
	3 rd	Manufacturing of ethanol from synthesis gas
	4 th	Application of synthesis gas
11 th	1 st	Manufacturing of vinyl monomer (Acrylonitrile)
	2 nd	Manufacturing of vinyl monomer (vinyl chloride)
	3 rd	Manufacturing of vinyl monomer (vinyl acetate)
	4 th	Application of vinyl monomer
12 th	1 st	Manufacturing of Polyester monomer (Phthalic Anhydride)
	2 nd	Manufacturing of Polyester monomer (Terephthalic acid)
	3 rd	Application of polyester
	4 th	CHAPTER-6: THIRD GENERATION PETROCHEMICALS Introduction
13 th	1 st	Properties of formaldehyde
	2 nd	Manufacturing of formaldehyde
	3 rd	Properties of acetaldehyde
	4 th	Manufacturing of acetaldehyde
14 th	1 st	Properties of Acetic acid
	2 nd	Manufacturing of Acetic acid
	3 rd	Properties of Aniline
	4 th	Manufacture of Aniline
15 th	1 st	Manufacture of BTX (Benzene, Toluene, Xylene).
	2 nd	Flow sheet Description of BTX
	3 rd	Manufacture of Melamine and linear alkyl benzene
	4 th	Application