

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		Petrochemical Engineering		
Semester		IV			Version		1.0.0.0		
Effective from Academic Year			2020-21		Effective for the batch Admitted in			July 2019	
Subject code		2PCE4104		Subject Name		Petrochemical Engineering II			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	4	0	1	0	5	Theory	40	60	100
Hours	4	0	2	0	6	Practical	30	20	50
Pre-requisites:									
Course Objective									
<ul style="list-style-type: none"> To understand Separation of Oil and Gas, gathering, stabilization, dehydration, desalting processes. Able to understand concept of fractionation – Distillation theory (atmospheric pressure, reduced pressure, azeotropic and extractive) To know Composition of petroleum, natural gas, major petroleum fractions and products To know Principles and uses of modern physico chemical analysis techniques such as UV, IR, NMR, MS, GLC etc 									
Theory syllabus									
Unit	Content								Hrs
1	Separation of Oil and Gas: gathering, stabilization, dehydration, desalting, sorting and mixing, transportation and storage of oil and gas, metering systems, group gathering stations and tank farms.								6
2	Elementary concept of fractionation: Distillation theory (atmospheric pressure, reduced pressure, azeotropic and extractive) solvent treatment, asphaltene separation and fractionation. Absorption, chemical methods like sulphuric acid treatment, molecular complex formation, Extraction and use of data.								9
3	Composition of petroleum and natural gas: major petroleum fractions and products (refinery gases, gasoline, naphtha, kerosene, diesel, fuel oil, lubricating oil, other oil products, waxes, asphalt, coke, acid sludge) Hydrocarbons and non hydrocarbons present (Type, name, structure, role) chemical aspects of origin of petroleum and natural gas.								10
4	Classification and description of various crude: General methods of classification and correlations. N-d-M ring analysis method, comparison of structural group analysis by spectroscopic and physical property methods. MW determination, correlation method for structure of solid saturated hydrocarbons.								9
5	Principles and uses of modern physico chemical analysis techniques : such as UV, IR, NMR, MS, GLC etc. in petroleum and product analysis.								5
6	Evaluation of crude and petroleum fractions : use of data with reference to physical, thermal, electrical, optical and other test properties. Significance of these tests and national and international significance.								6
Practical content									
The Practical/term work shall be based on the topics mentioned above and will be defended by the									

candidates.	
Text Books	
1	Modern Petroleum Technology : G D Hobson and W Pohl
2	Petroleum Refining Engineering : W L Nelson
Reference Books	
1	Chemical Technology of Petroleum : W A Gruce and Stevens
2	The Chemistry and Technology of Petroleum : James G Speight
3	Petroleum refining, Technology and Economics : J H Gary and G E Handwork
ICT/MOOCs references	
1	https://nptel.ac.in/courses/103102022/
2	https://nptel.ac.in/content/storage2/courses/103103029/pdf/mod2.pdf
Course Outcomes	
	<p>Student will understand Separation of Oil and Gas, gathering, stabilization, dehydration, desalting processes.</p> <p>Able to understand concept of fractionation – Distillation theory (atmospheric pressure, reduced pressure, azeotropic and extractive)</p> <p>Understand Composition of petroleum, natural gas, major petroleum fractions and products\</p> <p>To know Principles and uses of modern physico chemical analysis techniques such as UV, IR, NMR,MS, GLC etc</p>