

CHE1014	PETROLEUM TECHNOLOGY	L	T	P	J	C
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Pre-requisite	NIL	Syllabus version				
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Course Objectives:						
<ol style="list-style-type: none"> 1. Understand the importance of crude oil as source of fuel and the size of refining industry 2. Interpret the challenges involved in refining from viewpoint of product specifications, economic considerations and environmental regulations 3. Design application of chemical engineering principles to petroleum refining 						
Course Outcomes (CO):						
<ol style="list-style-type: none"> 1. Explain the composition of crude oil and its products, along with its properties and characterization methods 2. Discuss the basic separation and conversion processes used in refining crude oil 3. Implement the chemical engineering principles to the analysis of safe and efficient refinery operations 4. Identify the specifications required for good quality petroleum product 5. Exemplify the process of purification and fractionation of crude oil 6. Interpret the relationship safety and environment in Petroleum Refining Industries 						
Student Learning Outcomes (SLO): 1,2,17						
<ol style="list-style-type: none"> 1. Ability to apply mathematics and science in engineering applications 2. Clear understanding of the subject related concepts and of contemporary issues 17. Ability to use techniques, skills and modern engineering tools necessary for engineering practice 						
Module:1	Petroleum					6 hours
Exploration Practices - Reservoir Rock Properties - Reservoir types - Reservoir Estimation Origin – Composition - Classification and constituents of petroleum - Dehydration of crude oil- Transportation of crude oil - Classification of petroleum						
Module:2	Distillation					6 hours
Components of crude oil distillation - various crude oil distillation systems - uses of petroleum products						
Module:3	Cracking					8 hours
Necessity of cracking - Types of cracking - advantages and disadvantages of catalytic cracking over thermal cracking - Houdry's fixed bed processes - Moving bed processes - Fluid bed catalytic cracking processes						
Module:4	Reforming					4 hours
Thermal and catalytic Reforming; Polymerization; Alkylation; Isomerization						
Module:5	Purification of petroleum products					7 hours
Sweetening processes types –Merox – HDS; Dewaxing; Deasphalt; Lube oil treatment						

Module:6	Properties of Petroleum Products	7 hours
Specific gravity - Vapor pressure – Viscosity - red wood viscometer - Flash point - Fire point - Pour point - Smoke point - Aniline point - Diesel index - Octane number - Performance number - Cetane number - Properties of greases - Drop point of grease		
Module:7	Knocking	5 hours
Reasons for knocking - Additives in petrol - Aviation gasoline - Aviation turbine fuel (ATF) - Storage and handling of liquid fuels		
Module:8	Contemporary issues	2 hours
Total Lecture hours		45 hours
Text Books		
1.	Gary J.H., Handwerk G.E., Kaiser M.J., Petroleum Refining Technology and Economics, 6 th ed., CRC Press, USA, 2013.	
2.	Speight J.G., Petroleum Refining Process, 1 st ed., Taylor and Francis, USA, 2015	
3	Bhaskara Rao B.K., Modern Petroleum Refining Processes, 5 th ed., Oxibh, India, 2013	
Reference Books		
1.	Mohamed A.F., Taher A., Amal E., Fundamentals of Petroleum Refining, 1 st ed., Elsevier, USA, 2010.	
2.	Nelson, Petroleum Refinery Engineering, 4 th ed., McGraw Hill, USA, 2010.	
Mode of evaluation: Continuous Assessment Test, Quizzes, Assignments, Final Assessment Test		
Recommended by Board of Studies	15-04-2019	
Approved by Academic Council	55 th	Date 13-06-2019