Faculty of Engineering & Technology

Petroleum Refining Engineering

Information :

Course Code :	PE 306	**Level :**	Undergraduate	**Course Hours :**	1.00- Hours

Department : Department of Petroleum Engineering

Instructor Information :

Title	Name	Office hours
Associate Professor	Tarek Mohamed Aboul Fotoh Mohamed	5

Area Of Study :

Define the fundamentals of petroleum refining engineering.
Recognize the physico-chemical characteristics of crude oils and products.
Analyze the data sheets for crude oils and products.
Define the physical separation processes.
Recognize the conversion operation processes.
State the mechanism of each process.

Description :

Crude oil fractionation, Details of the design of Atmospheric and Vacuum distillation Columns, Basic petroleum fractions from AD/AV complex, Refinery Gases, Gasoline Specifications and use in Internal Combustion Engines, ignition quality of gasoline, Pre-ignition and Detonation, Mechanism of Detonation, Naphtha Specification and uses, Aviation Turbine Fuel, Kerosene specifications (uses and production of Linear Alkyl Benzene LAB), Gas Oil and Diesel Fuel, Fuel oil and Asphalt specifications and uses, Wax distillates production, Manufacture of lubricating oils, Theory of friction and Lubrication, Manufacture of grease, Complex refinery schemes for processing of Natural Gas and crude oil, dehydration, desulphurization, Cracking and reforming Operations.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Illustrate knowledge and understanding functions of each process in the petroleum refining.
2 -	Illustrate solving techniques of problems in the operation system of each process.
3 -	Describe the flow-diagram of petroleum refining processes.
4 -	Illustrate the characteristics of petroleum products.
5 -	Describe the function of catalysts in each process.
b.Intellectual Skills: :	
1 -	Apply different techniques for solving the problems in the petroleum industry.
2 -	Choose the best and economic solution for the operation techniques.
3 -	Compare between the different methods of testing to select the best qualification.
c.Professional and Practical Skills: :	
1 -	Evaluate the economic solution for the operation techniques.

d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary team.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Overview of all Petroleum Refining Processes	4	2	2
Crude Oil Classifications	4	2	2
Crude Oil Composition	2	1	1
Physico-chemical Characteristics of Crude Oil and Products	2	1	1
Atmospheric Distillation Process	2	1	1
Introduction to Petroleum Refining Engineering	2	1	1
Vacuum Distillation Process	2	1	1
Thermal Cracking Process	2	1	1
Catalytic Cracking Process	2	1	1
Catalytic Reforming Process	2	1	1
Catalytic Hydrotreating Process	2	1	1
Catalytic Hydrocracking Process	2	1	1
Alkylation and Isomerization Process	2	1	1

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		Course understanding
Final exam	40.00	14	Comprehensive understanding of the Course
Midterm Exam	25.00		Course understanding
Quizzes	25.00		Course understanding

Recommended books :

Wilbur Lundine Nelson, Petroleum Refinery Engineering, McGraw-Hill.