

*Ministry of Higher Education  
and Scientific Research*

*University Of Tikrit  
College of Engineering*

*Chemical Engineering Department*

Petroleum Refining

Fourth Year

By

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**Petroleum Refining**  
**Fourth Year - B.S. Syllabus**

### **Objectives**

- *To impart the basic concepts of petroleum processing and manufacture of Petrochemicals*
- *To develop understanding about refining and post refining operations*

### **Course Description**

*This course presents a comprehensive introduction to petroleum refining technology and calculations. The focus is on transportation fuels refineries is also discussed. The program includes an overview of crude oil supply and petroleum product demand. This is followed with a description of refinery process technology. Major refining technologies are described such as crude oil distillation, heavy oil conversion options, hydrotreating, and catalytic reforming.*

### **Learning Outcomes**

*Understanding of oil refining and associated downstream processing technologies, operations and calculations; process safety, oil products – properties and Specifications, operations integrity; and methods for oil productions with their calculations.*

No	Topics	Hours
1	Classification of Crude Oils, Composition of Crude Oils	4
2	Physical and Chemical Properties of Crude oil and Oil Products	10
3	Evaluation of Crude Oil	4
4	Crude Oil Pre-treatment, Fractionation of Crude Oil (Atmospheric and Vacuum Distillation, Light End Fractionation, Process Description)	8

5	Thermal Cracking and Coking Processes	6
6	Catalytic Operations (Processes and calculations) - (Fluid Catalytic Cracking, Hydrocracking, Hydrotreating, Catalytic Reforming, Isomerization, Alkylation, Catalytic Dewaxing)	26
7	Chemical Treatment of Oil Products	4
8	Lubricating Oils (Specifications, Production Process, Calculations)	4
9	Solvent Refining (Solvent Deasphalting, Solvent Extraction, Solvent Dewaxing, Wax Deoiling)	6
10	Oil Products – Properties and Specifications, Description of Process Flow and Calculations- (Oil Gases, Gasoline, Kerosene, Jet Fuel, Gas Oil, Diesel Oil, Fuel Oil, Asphalt, Greases and Wax)	12
11	Safety and Environmental Aspects in Refining (Air Quality, Sulfur Recovery, Wastes in Refinery Units, Fugitive Emissions)	6

### **Text Book**

- 1- Fahim, M.A.; Al-Shahhaf, T.A. and Elkilani, A.S., *Fundamentals of Petroleum Refining*, Elsevier.

### **References**

- 2- Hsu, Ch.s. and Robinson, P.R., *Practical Advances in Petroleum Processing*, Springer.
- 3- Riazi, M. R., *Characterization and Properties of Petroleum Fractions*, ASTM International.
- 4- Nelson, W.L., *Petroleum Refinery Engineering*, McGraw-Hill.