

## (Crude oil refinery)Course Catalogue

### 2022-2023

College	Erbil technology	
Department	Petroleum technology	
Module Name	Crude oil refinery	
Module Code	COR301	
Semester	3	
Credit	6	
Module type	Core	
Weekly hours	3	
Weekly hours (Theory)	( 3)hr Class	( 180 )hr Workload
Weekly hours (Practical)	( )hr Class	( )hr Workload
Lecturer (Theory)	Ahmed Rafiq & Qasim Yahya Mohammed	
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Lecturer (Practical)		
Email		

## Course Book

### Course overview:

- A study of physical and chemical processes to convert crude oil into desired products with an outlook from present to future.
- Formation of capability to apply knowledge in theoretical basics of petroleum refining processes for professional activity and education work.

### Course objective:

The objectives of the course shall be to enable students to:

- Explain the market drivers for the refining industry.
- Indicate what crude oils consist of and how crude oils are characterized based on their physical properties;
- Express the objectives of petroleum refining and classify the processes used in petroleum refining ;
- Demonstrate how a petroleum refinery works and sketch a flow diagram that integrates all refining processes and the resulting refinery products ;
- Examine how each refinery process works and how physical and chemical principles are applied to achieve the objectives of each refinery process ;
- Assess implications of changing crude oil feedstocks on refinery configuration and propose strategies to resolve conflicts with degrading crude oil quality and increasingly stringent environmental regulations on petroleum fuels ;
- Discuss different sources of natural gas and explain how natural gas is processed at well sites and in processing plants with application of selected refinery processes and other physical operations.

### **Student's obligation**

Students should read ahead and be prepared to ask/answer questions during class on the material as it is covered. In addition to class lectures based upon material in the textbook, we may cover material in more detail or discuss recent advances in refinery beyond what is covered in the textbook. In these cases, supplementary course material will be provided to the student either as handouts or as web links. Discusses students' suggestions, opinions and questions at teacher office hours.

Preparing reports, seminars and other activates.

### **Forms of teaching**

lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters

#### **- Assessment scheme**

6% Mid. Theory exam

4% Quiz

40% Activity

15% final theory

### **Student learning outcome:**

At the end of the course student will:

- Know fundamentals of petroleum refining, types of energy resources, fundamentals of crude oil treatment and natural gas processing, fundamentals and purposes of re-refining processes and properties of main oil products.
- Be able to understand oral speech in the field of petroleum refining.
- Be able to prepare and deliver oral reports on the professional topics (petroleum refining).

**- Course Reading List and References:**

**Basic references**

**Textbooks:**

1. Fahim M.A., Sakhaf T.A., Elkilani A.S. Fundamentals of Petroleum Refining: – First Edition. – Elsevier. – 2010. – 485 p.
2. Chaudhuri U.R. Fundamentals of Petroleum and Petrochemical Engineering. – CRC Press. – 2011. – 406 p.
3. Devold H. Oil and gas production handbook. – SRH Media. – 2013. – 340 p.
4. Meyers Robert A. (ed.) Handbook of petroleum refining processes. 3- rd edition. McGraw-Hill Professional. – 2003. – 847 p.
5. An introduction to petroleum refining and the production of ultra low sulfur gasoline and diesel fuel. –ICCT. – 2001. – 89 p.
6. Silyn-Roberts H. Writing for Science and Engineering: Papers, Presentations and Reports.– Elsevier Ltd. – 2013. – 208 p.
7. Berger Robert E. A Scientific Approach to Writing for Engineers and Scientists. – Piscataway, NJ: Wiley. – 2014. – 232 p.
8. Murphy R. English Grammar in Use. 4th edition. – Cambridge. – 2012. – 299 p.

**Source links:**

1. <http://www.scopus.com>.

2. <http://www.webofknowlege.com>.

3. <http://www.sciencedirect.ru>.

**Course topics (Theory)**

**Weak**

- 1- Overview to refinery processes
- 2- Classification of crude oil and processes
- 3- Refining operations
- 4- Physical and chemical processes
- 5- Desalting
- 6- Crude distillation (Main Components of Distillation Columns and Trays and plates)
- 7- Refinery units
- 8- Atmospheric distillation
- 9- Vacuum distillation
- 10- Thermal processes ( visbreaking , delay cooking , fluid catalytic cracking and catalytic reforming)
- 11- Alkylolation
- 12- Treatment of refinery gases

**Learning Outcome**