

University of Petra		
Faculty of Art & Sciences		كلية الآداب والعلوم
Department of Chemistry		قسم الكيمياء

Course Syllabus

Year: 2019/2020

Semester: Second

Course No.	Course Title	Pre-requisite	Co-requisite	Credit Hours	ECTS*
101455	Inorganic Industries	101232	None	3	5

* European credit point transfer system

Instructor's Name	Instructor's email	Office No.	Office Ext.	Office Hours
Dr. Muayad Esaifan	muayad.esaifan@uop.edu.jo	7117	7117	Sun., Tue. 8-9, 10-11 Wed. 11-13, Thur. 8-9 & 11-13

Course Description	The course covers the chemical process of inorganic industries; It mainly cover the following topics: Sulfur industry, Nitrogen based industrial products, mineral extraction, mineral fertilizers, industrial and domestic water production, Industrial gas productions, inorganic solids, cement, zeolites synthesis glasses, and pigments. Emphasis is on learning the importance of inorganic chemical industry, their economic impact, individual chemical processes and production challenges.
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Course Objectives:

- To improve the student's knowledge of the basic information for industrial requirements and methods of preparation.
- To develop awareness on the contributions of chemistry to society.
- To develop awareness on the range and scope of the Jordan chemical industry.

Course Intended Learning Outcomes (ILOs) and their Alignment with Program ILOs:

Upon successful completion of this course, students are expected to achieve the following learning outcomes:

Course ILOs	Program ILOs	Teaching and Learning methods	Assessment Methods
Knowledge(K)			
1. Classify the chemical industry in terms of products, raw materials, scale and types of transformations	K1	Lecture notes and power point slides	Exams
2. Describe metal extraction in general and the extractive metallurgy of iron, aluminium and copper in particular.	K2	Lecture notes and power point slides	Exams
3. Discuss with the help of relevant flow diagrams, equations, operating conditions and equipment principles, the manufacture of chlorine, sodium hydroxide, ammonia, sulphuric acid, fertilizer and cement	K3	Lecture notes and power point slides	Exams

Course Schedule:

Topic	Topic details	Course ILOs #	Ref.
Introduction to Industrial Chemistry:	Introduction, classification of chemical industries, heavy and fine chemicals	K1, I1.	Text book And Literatures
Industrial Gases	Introduction, manufacture and uses of carbon dioxide, nitrogen, oxygen, hydrogen, ammonia		
Sodium compounds	Sources, uses and preparation of sodium chloride. Manufacture, properties and uses of sodium carbonate, sodium bicarbonate sodium hydroxide and chlorine.		
Mineral acids	Manufacture, properties and uses of nitric acid, sulfuric acid, hydrochloric acid, phosphorus and phosphoric acid		
Cement Industry	Raw materials, manufacturing method, types of cement		
Glass Industries	Raw materials, manufacture of glass, types of glass		
Ceramic Industry	Raw materials, manufacturing methods and properties of white wares, clay products, refractories		

Phosphorus based agrochemicals	Introduction of fertilizers. Synthesis, properties and uses of ammonium phosphate, super phosphate, triple super phosphate.		
Nitrogen fertilizers	Introduction, manufacture & properties of urea, ammonium chloride, calcium ammonium nitrate (CAN), ammonium sulfate .		
Potassium fertilizers	Introduction manufacture and properties of potassium chloride and potassium sulfate		
Paint Industries	Introduction, types, manufacture and properties of paints		
Heavy Metal Poisons	Definition, Cd, Hg, Cr, and Pb poison and Treatment		
Recyclable	Recycling of waste in chemical and other industries, fly ash utilization. Recycling of metals		

Textbook: Industrial Inorganic Chemistry “ by Buchel, Moretto & Woditsch, 2nd edition, Willey, 2000.

Other References:

- 1- Inorganic Chemistry, by *Shriver & Atkins*, 5th Edition, 2010
- 4- Publications.

Assessment Methods and Grading System:

Assessment method	Grade
First exam	30
Second exam	30
Final exam	40
Total	100

Course Policies

- Attendance Policy: University regulations apply to attendance.
- Academic Honesty: Academic dishonesty is an unacceptable mode of conduct, and will not be tolerated in any form at University of Petra. All persons involved in

academic dishonesty and plagiarism in any form will be disciplined in accordance with University rules and regulations.

Approved by	Name	Date	Signature
Head of Department	Dr. Abdelmnim Al Tweiq	23.2.2020	
Faculty Dean	Prof. Dr. Rami Abd elrahem	23.2.2020	

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