Course Code: 427-Chem.

Course Title: Industrial Inorganic Chemistry

Semester credit hours: 3.0 credit. (2+0+2)

Total Contact Hours: 30 hr. theory (Monday and Thursday 12-1)

30 hr. practical (Thursday 1-3)

Instructor: Dr. Asma A. Alothman

Office location: Blg. 5, T floor, Room No. 179

Office hours: (Monday and Wednesday 8-9)

Email address: aaalothman@ksu.edu.sa

@asmaaalothman

Required Text Books:

Elementary Principles of Chemical Processes: Industrial Inorganic Chemistry, 2nd Completely Revised Edition, Karl Heinz Buchel, Hans-Heinrich Moretto, Dietmar Werner. ISBN: 978-3-527-61333-5

https://www.slideshare.net/lyovmyshkin56/industrial-inorganic-chemistry2nded3527298495

Course Description:

Industrial inorganic chemistry deals with commercial production of inorganic chemicals and related products from natural raw materials. The aim of this course is to provide the students with the knowledge and understanding of the classification of the chemical inorganic industry, raw materials, inorganic chemical processes, ore dressing, magnetic separation and floatation, Pyro-processing and Refining. Learn about water treatment, waste water treatment and water desalination. Explain the hydrometallurgy, electrometallurgy and thermite extraction of metals. Deep understanding of ultra-purification of metals, electro-refining, ceramic composite and quartz industry. In addition, extraction of elements for semiconductors, sulfuric acid and fertilizer industries.

Topics:

List of Topics	**No. of Weeks**
1- Water quality; water treatment; waste water treatment; desalination of sea water and water pollution.	2
2- metallurgy: Ore dressing; magnetic and floatation separation; Pyro-metallurgy; extraction of iron, lead, chromium. Hydrometallurgy: extraction of gold, silver and mercury. Electro-metallurgy: extraction of aluminum, and sodium. ultra-purification of metals, Electro-refining, chemical refining and alloys	3
3- ceramics and composites: Processing of ceramic and application; superconducting ceramics; glass and quartz industry;	2
4- Extraction of elements for semiconductors, ultrapure silicon, phosphorus arsenic	3
5- Industries of sulfuric acid, nitric acid and hydrochloric acid.	2
5- Inorganic fertilizers, detergent and household cleaning industries.	3

Class organization:

- In-class: Power Point presentations will be used as the major visual aid in the class (http://fac.ksu.edu.sa/aaalothman/). Learning of these subject needs reading the required text book.
- Use of available learning videos of different industries.
- Field trips for the local industrial companies.
- Off-class: Students are expected to lead independent learning through solving the different assignments, activities and preparing for the pop quizzes. Individual consultations are offered during office hours or by an appointment (via e-mail).

Grading:

Assessment task	Week Due	Proportion of Total Assessment
Homework, Activities, Projects	will be schedule	20%
1st midterm exam	6th	20%
2nd midterm exam	12th	20%
Final exam	Monday 26/4/1441 8:00-10:00	40%