



Course Specifications

Course Title:	Industrial Chemistry
Course Code:	2044214-2
Program:	Bachelor in Chemistry
Department:	Department of Chemistry
College:	College of Sciences
Institution:	Taif University

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A. Course Identification

1. Credit hours: 2 (Theoretical)
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 7 th Level/ 4 th Year
4. Pre-requisites for this course (if any): NA
5. Co-requisites for this course (if any): NA

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	24	80 %
2	Blended	6	20%
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	24
2	Laboratory/Studio	-
3	Tutorial	-
4	Others (Blended)	6
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to shed light into the importance of industrial chemistry in daily live basis and to introduce students to a wide range of industrial processes.

2. Course Main Objective

Describe the basic concepts and principles laws of industrial processes and study the manufacture of some chemical industries.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Recall Basic definitions and terminology	K1
1.2	Recognize the theories and terms related to chemical processes.	K2
1.3	Determine the interactions between chemistry and industrial applications.	K3
2	Skills:	
2.1	Explain types of Heat Transfer, Conductive, Convection, Radiation and material balance	S1

CLOs		Aligned PLOs
2.2	Apply the industrial process relations	S3
3	Values:	
3.1	Participate in the development of the performance of work teams	V1
3.2	Represent social ethics and responsible citizenship	V2

C. Course Content

No	List of Topics	Contact Hours
1	Definition and importance of industrial chemistry.	2
2	Basic concepts of industrial chemistry; Technical Expressions, Economic Feasibility, and Technical Feasibility	4
3	Industrial Processes Calculations: Materials Balance without Chemical Reactions, Materials Balance with Chemical Reactions.	2
4	Separation Processes: Isolating products, Extracting Materials, Physical Methods of Separation, unit operation.	4
5	Fluids Flow: Definition of Fluid, Equation of continuity, Bernoulli's Law, Turbulent & Streamlined flow	2
6	Heat Transfer: Types of Heat Transfer, Conductive, Convection, Radiation, First Law of Heat Transfer.	2
7	Inorganic Chemicals Manufacturing: Acids manufacturing methods, Cement manufacturing.	2
8	Extraction Metallurgy: Iron Ores, Raw Material Preparations, Iron and Steel types.	4
9	Chemical Reactions in High Furnace: Aluminum Extraction.	4
10	Chemical Reactions in High Furnace: Phosphate Extraction.	4
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Recall Basic definitions and terminology	Lecture	Written Exam
1.2	Describe the Importance of Industrial Chemistry	Lecture	Written Exam
1.3	Determine the interactions between chemistry and industrial applications	E-learning	Written Exam
2.0	Skills		
2.1	Explain types of Heat Transfer, Conductive, Convection, Radiation and material balance	Discussion	Homework Assignments
2.2	Apply the industrial process relations	Discussion	Homework Assignments
3.0	Values		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Participate in the development of the performance of work teams	Collaborative Learning	Individual presentations
3.2	Represent social ethics and responsible citizenship	Self-learning	Individual presentations

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework Assignments (Electronic)	Throughout Semester	15%
2	Individual presentations	Throughout Semester	5%
3	Periodical Exam	7/8	15%
4	Mid Term Exam	11/12	15%
5	Final exam	16	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Commitment to the rules of the Academic Advising Department at the university in accordance with the academic guidance manual approved by the university and the attached forms, there are different arrangements made by teaching staff to support student consultations including;

- Office hours: 8 hours per a week for each academic member.
- Academic guidance: an academic member has a number of students to guide them throughout degree journey.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • An Introduction to Industrial Chemistry, Alan Heaton (1996), Latest Edition. Springer, Dordrecht (Netherlands). ISBN: 978-0-7514-0272-8.
Essential References Materials	<ul style="list-style-type: none"> • Industrial Inorganic Chemistry, Mark Anthony Benvenuto (2015), Latest Edition. Walter de Gruyter GmbH & Co KG. ISBN: 978-3-1103-8223-5.
Electronic Materials	<ul style="list-style-type: none"> • Saudi Digital Library (SDL)
Other Learning Materials	<ul style="list-style-type: none"> • Learning Management System (Blackboard)

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Lecture hall with 100 seats

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> Blackboard access
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	----

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching and assessment	Students	Survey (indirect method)
Extent of achievement of course learning outcomes	Program leader	Reports (Direct method)
Quality of learning resources	Peer referees Students	Reports (Direct method) Survey (indirect method)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Council/ Quality assurance committee
Reference No.	7-3-1445
Date	27/2/1445 HJ 12/09/2023 G

