



Course Specifications

Course Title:	Corrosion Chemistry
Course Code:	2044207-2
Program:	Bachelor in Chemistry
Department:	Department of Chemistry
College:	College of Sciences
Institution:	Taif University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	3
C. Course Content	4
D. Teaching and Assessment	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	4
2. Assessment Tasks for Students	4
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	5
G. Course Quality Evaluation	6
H. Specification Approval Data	6

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 type="checkbox"/> Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: 8 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	2 Theoretical hours/ Week	100 %
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The course introduces the principles of corrosion, concepts of electrochemical corrosion, corrosion thermodynamics, corrosion kinetics, linear polarization measurement, Tafel plot measurement, corrosion rate measurements, high temperature oxidation and corrosion control. It also describes the cathodic protection, coatings, inhibitors and materials selection.

2. Course Main Objective

The course considers as a direct training for applied chemistry in the industry.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Describe the concept of corrosion thermodynamics and kinetics	K2
1.2	Determine the interaction of corrosion in economic and environmental applications	K3

CLOs		Aligned PLOs
2	Skills:	
2.1	Apply the thermodynamic and kinetics theories to corrosion	S1
2.2	Explain high temperature corrosion and Linear polarization measurement	S2
3	Values:	
3.1	Participate in the development of the performance of work teams.	V1

C. Course Content

No	List of Topics	Contact Hours
1	Principles of corrosion.	2
2	Concepts of Electrochemical corrosion.	2
3	Corrosion thermodynamics and Corrosion kinetics.	4
4	Linear Polarization measurement and Tafel Plot measurement.	4
5	Corrosion rate measurements from corrosion current.	4
6	High Temperature oxidation and corrosion.	2
7	Corrosion Control Fundamentals and Cathodic Protection.	4
8	Coatings.	2
9	Inhibitors.	2
10	Materials selection and design.	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	Describe the concept of corrosion thermodynamics and kinetics	Lecture	Written Exam
1.2	Determine the interaction of corrosion in economic and environmental applications	Lecture	Written Exam
2.0	Skills		
2.1	Apply the thermodynamic and kinetics theories to corrosion.	Discussion	Homework Assignments
2.2	Explain high temperature corrosion and Linear polarization measurement.	Problem-Solving	Homework Assignments
3.0	Values		
3.1	Participate in the development of the performance of work teams	Collaborative 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%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
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"> • Principles and Prevention of Corrosion, Denny A. Jones (1996). Prentice Hall (USA), Latest Edition. ISBN: 0133599930.
Essential References Materials	<ul style="list-style-type: none"> • An Introduction to Electrochemical Corrosion Testing for Practicing Engineers and Scientists, W. Stephen Tait (1994). PairODocs Publications, Latest Edition. ISBN: 9780966020700.
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.
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> • Computer and data show with Wi-Fi access. • ChemDraw and Chem sketch software.
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



Chemistry Program TU