2023
TP-153

Course Specification
(Bachelor)

Course Title:	Solid State Chemistry
Course Code:	ICHM352-2
Program:	Bachelor of Science in Industrial Chemistry
Department:	Department of Physical Sciences
College:	College of Science
Institution:	Jazan University
Version:	TP-153 (2024)
Last Revision Date:	2 March 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (2hrs)

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐ Elective		

3. Level/year at which this course is offered: (6th Level--- 3rd Year.)

4. Course general Description:

Course title	Course code	Contact Hours			Credit Hours	Year	Level	Prerequisite	Corequisite
		Lec	Tut	Lab					
Solid State Chemistry	ICHM352-2	2	0	0	2	3rd	6th	CHEM225-2	--

This course aims to give the students some variety information about the chemical and physical properties for solid state, methods of their preparation and industrial application.

5. Pre-requirements for this course (if any):

CHEM225-2

6. Co-requisites for this course (if any):

Non

7. Course Main Objective(s):

1. Recognizing the crystal structure and physical methods for examining solids.
2. Describe preparation methods, types of bonds, and electronic properties.
3. Discuss types of non-quantitative measurement and the types of crystal deformation.
4. Distinguish similar structures and optical and magnetic properties of solid
5. Recognizing the industrial importance of solids.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	$(2 \times 15) = 30$	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding;** *Upon completion of the course, students are able to:*			
1.1	Demonstrate a broad, knowledge in the basic principle of solid state structure. (P)	K(1)	Lecture group work discussion	MCQ
1.2	Describe the essential facts, principles and theories, preparation of crystal and their physical and chemical properties, the types of non-quantitative measurement and, the industrial importance of solids. (P)	K(2)	Lecture group work discussion	Q & A
2.0	**Skills;** *Upon completion of the course, students are able to:*			
2.1	Demonstrate the knowledge and skills in the types of crystal deformation, similar structures and optical and magnetic properties of solid, Crystalline levels and vectors, basic crystallographic calculations, x-ray diffraction (P)	S(1)	lecture group work discussion	oral Solving Problems & chart analysis
2.2	Make effective use of communication, and online technology about chemistry topics in order to improve their basic knowledge in writing (report and paper/ poster) with a good verbal and clear scientific language. (P)	S(5)	project-based learning	Research presentation rubric

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility;** *Upon completion of the course, students are able to:*			
3.1	**Act with integrity and good ethics in chemistry profession and their obligation to society (P)**	**V(2)**	**Research activities**	**Ethic check rubric**

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to the solid state, the crystal system, the crystal unit cell	3
2.	Types of solid materials, external structure of solids	4
3.	Symmetry in solids, unit cell, internal structure of crystallized materials	3
4.	Crystalline levels and vectors	3
5.	Basic crystallographic calculations	4
6.	Types of crystal lattices, X-ray diffraction	3
7.	The crystal structure of inorganic elements and compounds	3
8.	Types of deformation in solid materials.	4
9.	Industrial importance.	3
	Total	$2 \times 15w = 30$

Types of solid

materials, external structure of solids

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	*Periodic Exams*	*During Semester*	*30%*
2.	*Assignments & Classroom Activities*	*During Semester*	*20%*
6.	*Final Exam*	*16-17*	*50%*
	Total		*100%*

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. **Solid State Chemistry and its Application, Anthony R. Wiley, 2022** 2. **يسري مصطفى ، الحسينى الطاهر (اساسيات كيمياء الجوامد) جامعة المنصورة ، جامعة ام القرى 2017.**
Supportive References	1. ***West-Elements of x-ray diffraction, B. D. Cullity, Addison-Wesley Publishing Company, 1978*** 2. ***Lesley E. Smart, Elaine A. Moore, Solid State Chemistry: An Introduction, 4th , CRC press (Taylor & Frances) 2012*** 3. ***Solid State Chemistry: An Introduction, Lesley E. Smart, Elaine A. Moore, 2004, Latest Edition. ISBN: 9780367135720***
Electronic Materials	Lattice Energy Calculator (sydney.edu.au)
Other Learning Materials	-

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	*1 Lecture room(s) for groups of 50 students*
Technology equipment (projector, smart board, software)	*Smart board, Data show, Black board, internet*
Other equipment (depending on the nature of the specialty)	*none*

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Likert-type Survey CES) Indirect
Effectiveness of Students' assessment	Instructor & Course coordinator	Class room evaluation (direct & indirect
Quality of learning resources	Program coordinator	Indirect
The extent to which CLOs have been achieved	Assessment committee	Indirect
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Physical Sciences Department Council
REFERENCE NO.	Meeting (3)
DATE	12/03/2024 -02/09/1445