



Course Specifications

Institution:	College of Education at Zulfy.
Academic Department :	.....Physics.....
Programme :	..... B.Edu. Degree in Physics...
Course :	Solid state (1).
Course Coordinator :	.....Dr. Emad Alhami.....
Programme Coordinator :	.....Dr. Fatema Alzahraa'
Course Specification Approved Date :	1/ 1 / 1438 H



A. Course Identification and General Information

1 - Course title :	Solid state (1).	Course Code:	.....Phys 323..
2. Credit hours :	(2 THEORETICAL + 1 EXP.)		
3 - Program(s) in which the course is offered:	B.Edu. Degree in Physics		
4 – Course Language :	.....arabic (equations in English)...		
5 - Name of faculty member responsible for the course:	.. Dr. Emad Alhami...		
6 - Level/year at which this course is offered :	. 6 th level.....		
7 - Pre-requisites for this course (if any) :	Phys 224		
8 - Co-requisites for this course (if any) :	non •		
9 - Location if not on main campus :	(.....)		
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	...80... %
B - Blended (traditional and online)	<input type="checkbox"/>	What percentage? %
D - e-learning	<input checked="" type="checkbox"/>	What percentage?	...10... %
E – Correspondence	<input type="checkbox"/>	What percentage? %
F - Other	<input checked="" type="checkbox"/>	What percentage?	...10... %
Comments :	.....	

B Objectives

What is the main purpose for this course? To describe crystal growth, solid objects and nano-particles, interdependence atomic crystal structure and lattice, Millar indices, constants crystalline defects, dispersion wavelength and lattice inverted, Brillion zones, X-ray and Bragg's law, phonons and oscillation crystal thermal properties of materials, heat capacity, density of states, Debye model, the Einstein model, free-electron model (Fermi gas)
Briefly describe any plans for developing and improving the course that are being implemented :

C. Course Description



1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Crystalline structure: crystalline and amorphous solids <ul style="list-style-type: none"> • crystalline lattice • unit cell • crystalline systems and Bragg lattices • packing fraction • examples on different crystals • miller indices 	3	6
Crystalline symmetry <ul style="list-style-type: none"> • inversion operations • mirror reflection operations • rotational operations • inversion- rotational operations 	2	4
Crystal growth	3	6
Determination of crystal structure <ul style="list-style-type: none"> • Bragg's law • x- rays 	2	4
Kinds of crystalline defects	2	4
Thermal properties of solids: heat capacity, Debye model, Einstein model	2	4
revision	1	2

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	.....	30	.....	.....	60
Credit	2	.....	1	.....	.....	3

3. Learning hours expected for students per week.

4





4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
	To describe crystal growth, solids, interdependence atomic crystal structure and lattice, Millar indices, constants crystalline defects, dispersion wavelength and lattice inverted, Brillion zones, X-ray and Bragg's law, phonons and oscillation crystal thermal properties of materials, heat capacity, density of states, Debye model and Einstein model.	interactive lectures Strategy discussion and dialogue Strategy - practical learning Strategy - Strategy for teaching thinking skills. - Problem-solving strategy. - decision-making Strategy Cooperative Education Strategy.	-Exercises and assignments home or classroom. -Worksheets, reports and scientific research. -Discussions
2.0	Cognitive Skills		
	To describe the crystal structure and the lattice To predict the packing fraction and the Millar indices To formulate the heat capacity of solids To differentiate between inversion, mirror reflection rotational operations To solve problems related with Bragg's law To conclude the crystal defects	Strategy to solve the problems - E-learning strategy - Self-learning strategy - - Project based learning Strategy -Modeling and simulation Strategy	Tests - Scientific research
3.0	Interpersonal Skills & Responsibility		
	Skill to take responsibility - Effective communication skills - collective decision making Skill - The skill of teamwork and participation in scientific communities - Leadership skill or skill to work within the group to get the Desired result - The skill of time management and organization - collaborative work Skill	- Practical training - Seminars - Attending meetings / scientific meetings	Assignments, reports and projects and offers the seminar offered by the students - Tests.
4.0	Communication, Information Technology, Numerical		
	-The use of technology in communication and scientific research.	Lectures practical training	Tests.





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	-the use of software and computers to solve problems in the physical and numerical difficulties. . - the use of technology in teaching and learning..	research projects	exercises and homework and classroom by technology. Preparation of research using the technology. perform tasks by use of technology
5.0	Psychomotor		

5. Schedule of Assessment Tasks for Students during the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Attendance	All weeks	5%+5%
2	Oral discussions	All weeks	5%+5%
3	Theor. Midterm exam	8 th	20%
4	Exp. Exam (final)	14 th	20%
5	Theor. Exam (final)	17 th	40%

D. Student Academic Counseling and Support

4 office hours per week

- Communicate; ask questions and inquiries through the site on the World Wide Web.

- To provide assistance and guidance to any inquiry or consulted regarding the article and given that

Include helping students understand the material and contribute to the process





of academic guidance, And assist students in the face of any problems and academic scholarships in this cours.

E. Learning Resources

1. List Required Textbooks :

- 1- “An Introduction to Solid States Physics”, C. Kittel, 6th Edition, John Wiley & Son Inc (1986).
- 2- “Solid State Physics, Ashcroft & Mermin”, 1st Edition, Harcourt Asia Pte Ltd (1976).
- 3- “Introduction to condensed matter physics.” Feng Duan & Jin Guojun, (World Scientific, 2005).

2. List Essential References Materials :

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3. List Recommended Textbooks and Reference Material :

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4. List Electronic Materials :

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5. Other learning material :

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F. Facilities Required

1. Accommodation

- Lecture room for 30 students
- Library
- Laboratory for experimental solid state

2. Computing resources

- Computer room
- Scientific calculator.

3. Other resources

G Course Evaluation and Improvement Processes





1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Midterm and final exam.
- Quiz.
- Research
- exploration

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- periodic review for the course-content

3 Processes for Improvement of Teaching :

- Fortification of the student learning.
- Handling the weakness point.

4. Processes for Verifying Standards of Student Achievement

- The instructors of the course are checking together and put a unique process of evaluation
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- 1- The following points may help to get the course effectiveness
 - Student evaluation
 - Course report
 - Program report
 - Program Self study
- 2- According to point 1 the plan of improvement should be given.
- 3- Contact the college to evaluate the course and the benefit it add to other courses.
- 4- Add some subject and cut off others depending on the new discoveries in physics.

Course Specification Approved Department Official Meeting No (2) Date 1 / 1 / 1438 H

Course's Coordinator

Name : Dr. Emad Alhami
Signature : Dr. Emad Alhami
Date : 1 / 1 / 1438 H

Department Head

Name : Dr. Fatema Alzahraa'
Signature : Dr. Fatema Alzahraa'
Date : 1 / 1 / 1438 H

