



Course Specifications

Institution:	College of Education at Zulfy.
Academic Department :	.....Physics.....
Programme :	..... B.Edu. Degree in Physics...
Course :	Solid state (2)
Course Coordinator :	.....Dr. Emad Alhami.....
Programme Coordinator :	.....Dr. Fatema Alzahraa'
Course Specification Approved Date :	1/ 1 / 1348 H



A. Course Identification and General Information

1 - Course title :	Solid state (2)	Course Code:	.....Phys 412.
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 :	. 7 th level.....		
7 - Pre-requisites for this course (if any) :			
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?
How to apply the conventional theory of free electrons and the energy bands on solids. ..
Briefly describe any plans for developing and improving the course that are being implemented :
Review.the course contents periodically



C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Assumptions of free electron theory, mean free path, relaxation time, differential form of Ohm's law	2	4
Microscopic particles, fermions, bosons, degenerate and non-degenerate ensembles	1	4
Fermi-Dirac statistics, Bose-Einstein statistics	1	2
Pressure and volume elastic coefficient of the electron gas	2	4
Problems	1	4
Specific heat (heat capacity) of solids	2	4
The importance of the energy bands theory, conductors, semiconductors and insulators	1	2
Bloch-functions, Kronig-Penney model	1	2
One-dimensional motion of electrons on the bases of energy bands theory	1	4
Relation between the conductivity and the temperature	1	
Brillion zones	1	
Problems	1	

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		
	<p>Student should know: fermions, bosons, degenerate and non-degenerate ensembles</p> <p>Student should remember the relation between temperature and the conductivity</p>	<p>interactive lectures Strategy discussion and dialogue Strategy - practical learning Strategy - Strategy for teaching thinking skills. - Problem-solving strategy. - decision-making Strategy Cooperative Education Strategy.</p>	<p>-Exercises and assignments home or classroom. -Worksheets, reports and scientific research. -Discussions</p>
2.0	Cognitive Skills		
	<p>Accessing Information Skill Note Taking Skill Drawing Conclusion Skill The skill of determining cause-effect relationship Classifying skill Developing concepts skill The skill of generating and testing hypotheses Comparing and contrasting skill Managing attention skill Problem-solving skill Questioning skill.</p>	<p>Strategy to solve the problems - E-learning strategy - Self-learning strategy - - Project based learning Strategy -Modeling and simulation Strategy</p>	<p>Tests - Scientific research</p>
3.0	Interpersonal Skills & Responsibility		
	<p>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</p>	<p>- Practical training - Seminars - Attending meetings / scientific meetings</p>	<p>Assignments, reports and projects and offers the seminar offered by the students - Tests.</p>
4.0	Communication, Information Technology, Numerical		
	<p>-The use of technology in communication and scientific research. -the use of software and computers to solve problems in the physical and numerical difficulties. .</p>	<p>Lectures practical training research projects</p>	<p>Tests. contact exercises and homework and classroom by</p>





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	- the use of technology in teaching and learning..		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

<p>1. List Required Textbooks :</p> <p>1- “An Introduction to Solid States Physics”, C. Kittel, 6th Edition, John Wiley & Son Inc (1986).</p> <p>2- “Solid State Physics, Ashcroft & Mermin”, 1st Edition, Harcourt Asia Pte Ltd (1976).</p> <p>3- “Introduction to condensed matter physics.” Feng Duan & Jin Guojun, (World Scientific, 2005).</p>
<p>2. List Essential References Materials :</p> <ul style="list-style-type: none"> • • •
<p>3. List Recommended Textbooks and Reference Material :</p> <ul style="list-style-type: none"> • • •
<p>4. List Electronic Materials :</p> <ul style="list-style-type: none"> • • •
<p>5. Other learning material :</p> <ul style="list-style-type: none"> •

F. Facilities Required

<p>1. Accommodation</p> <ul style="list-style-type: none"> • Lecture room for 30 students • Library • Laboratory for experimental solid state
<p>2. Computing resources</p> <ul style="list-style-type: none"> • Computer room • Scientific calculator.
<p>3. Other resources</p> <ul style="list-style-type: none"> • • •





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

