Course specification

University/Academy: Damanhour

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY (306)	Course title: Solid state physics (1)	Academic year/level: 2009-2010 3rd year (second term)
Specialization: Mathematics and physics	No. of instructional units: lecture 2hrs/ week tutorial - practical 3hrs/ week	

2. course Aim	• The course introduces the principles of the structure and physics of material as an introductory course for solid state physics.
3. Intended learning outcome	
a) Knowledge and understanding	**A1**: Understand the crystal structure, thermal properties and magnetic properties of materials. **A2**: Recognize the applications of X-ray crystallography.
b) Intellectual skills	B1: Compare between different types of Crystal imperfections. B2: Create theoretical dealing of the topic under investigation.

c) Professional skills	C1: Use the physical knowledge to analyze a suitable technique to solve problems. C2: Solve some physical problems helping in understanding the course parts.
d) General skills	D1: IT skills: - use the internet/electronic resources to obtain subject specific information,. - use a number of computer packages to present information. D2: Working with others: work with other as a part of a team to collect data and/or to produce reports and presentations. D3: Self-learning: - study independently, set realistic targets and plan work and time to met targets within deadlines. D4: Prpblem solving: - Regular problem exercises and example will give students the chance to develop their theoretical understanding and problem. D5: Communication: Students will have write reports and give oral presentation.
4. course content	- Structure of solids: Crystalline and amorphous. - X-ray diffraction. - Applications of X-ray crystallography. - Types of crystal imperfections. - Interatomic forces and classification of solids. - Lattice vibration. - Thermal properties: classical Einstein and Debby theories of heat capacity. - Thermal conductivity and thermal expansion. - Magnetic properties and classical theory

	- Types of magnetism.
5. Teaching and learning methods	5.1. Teaching will be by lectures, exercises . 5.2. All learning outcomes are delivered through lectures. 5.3.All lectures and worked examples are given from the lecturer private notes. Instructional Methods include: • Direct Instruction: lecture, reading, in class research, problem sets, presentations, and guest speakers • Instructional Materials: textbook; primary and secondary materials, experts from the field, and electronic media • Team Teaching which will include business, university, and community based partners • Community based applied concept projects • Self-directed, cooperative, and collaborative learning projects • Student oral presentations
6. teaching and learning methods for students with special needs	1- Over head projector 2- appropriate teaching accommodation and Computers 3- Laboratory with computer terminal.
7. Student Assessment	**7-1.** Semester Work. **7-2.** Mid-Term Examination . 7-3. **Practical Examination** 7-4. **Final Term Examination**

a) Procedures used:	7.1. Reaserch and presentation to assess skills of presenting data and discussion. 7.2. Mid-Term Examination To accesses ability to **continue in course** 7.3. practical exam. To access professional and practical skills. 7.4. written exam. To accesses ability to remember &.understand scientific background. &.understand scientific background.
b) Schedule:	Assessment1:Semesterwork Week: 4-8 Assessment 2: Mid-term Week: 10 Assessment 3: Practical final Week: 12 Assessment 4: Written final Week: 14
c) Weighing of Assessment:	Mid-Term Examination: 10 Final-Term Examination: 100 Practical Examination: 30 Semester Work: 10 Total: 150
8. List of Textbooks and References:	----------
a) Course Notes	Lecturer private notes
b) Required Books	1- "Elements of X-ray diffraction", B.D. Cullity,

(Textbooks)	Addison- Wesley pub. Company.Inc. 2- " Introduction to solid state physics", C.Kittel, John Wiley& son,Inc. 3- " Introduction to solids", L.V Azaroff, McGrew-Hill 4- " Structure of Metals", C.S Barrett, McGraw Hill. 5- " Solid state physics ", A.J. Dekker, MacMillan Press Ltd.
c) Recommended Books	1- " An Introduction to solid state Physics", R.J Elliot and A.F. Gibson. 2- " Theoretical structure Metallurgy", A.H. Cottrell, E.L.B.S.& Edward Arnold pub.Ltd.
d) Periodicals, web sites,…,etc	

Course Instructor: Dr / shaker Ibrahim

Head of Department

Date: -----/-----/----

Prof. Dr. El. M. Elmaghrby