Course specification

University/Academy: **Damanhour**

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY (402)	Course title: Semiconductors and Solid state physics	Academic year/level: 2010-2011 4th year (second term)
Specialization: Special physics , chemistry& physics and Math.&physics	No. of instructional units: lecture 2hrs/ week practical 3hrs/ week	

2. course Aim	• The course introduces the principles of the electrical properties of solids and semiconductors.
3. Intended learning outcome	
a) Knowledge and understanding	**A1**: Define the Electrical properties of solids. **A2**: Recognize the Band theory of solids.
b) Intellectual skills	B1: Show the different types of junctions. B2: Create theoretical dealing of the topic under investigation.
c) Professional skills	C1: Dissect the difference between Piezo-, pyro- and

	ferro -electric materials. C2: Examine some physical problems helping in understanding the course parts.
d) General skills	D1: Use of technology tools like the internet/electronic resources to obtain subject specific information,. - use a number of computer packages to present information. D2: The ability to work in groups: work with other as a part of a team to collect data and/or to produce reports and presentations. D3: The ability to communicate improving Self-learning: - study independently, set realistic targets and plan work and time to met targets within deadlines. D4:Write reports Problem solving: - Regular problem exercises and example will give students the chance to develop their theoretical understanding and problem. D5: The ability to communicate: Students will have write reports and give oral presentation.
4. course content	- Semiconductor crystal- band gap- equation of motion - Intrinsic carrier concentration- impurity conductivity - Thermoelectric effect- semimetals. - Semiconductor electronics- current flow- - Boltzman transport equation - Recombination of hole, electron pairs- continuity equation - Space group in Semiconductor. - Dielectrics and ferroelectric - Magnetic resonance. - Practical physics

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 (Textbooks)	1- "Introduction to solid state physics", C.Kittel, John Wiley & Sons, Inc. 2- "Introduction to Solids", L.V. Azaroff, McGrew –

	Hill. 3- "An Introduction to solid state physics", R.J.Elliot and A.F.Gibson, Macmillan Press, LTD. 4- Elementary Solid State Physics. By M.Ali Omar Revised Printing Addison Wesley Longman 1993. 5- The Physics of Solids By R.turton, Oxford Univ.Press.2000 6- " Theoretical structure Metallurgy", A.H. Cottrell, E.L.B.S.& Edward Arnold pub.Ltd.
c) Recommended Books	1. Feynman Lectures on Physics Volumes 1,2,3 - Feynman, Leighton and Sands
d) Periodicals, web sites,…,etc	**http://rugth30.phys.rug.nl/quantummechanics/** **http://phys.educ.ksu.edu/** **http://plato.stanford.edu/entries/qm/** **http://www.upscale.utoronto.ca/GeneralInterest/QM.html**

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Head of Department

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

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