Course specification

University/Academy: Damanhour

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY (202)	Course title: physics 2	Academic year/level: 2008-2009 2nd year (second term)
Specialization: Physical science group	No. of instructional units: lecture 4hrs/ week tutorial 2hrs/ week practical 4hrs/ week	

2. course Aim	• **The course provides the student with a clear and logical presentation of the basic concepts and principles of** nature Optics **, and to strengthen an understanding of the concepts and principles through a broad range of interesting applications to the real world.** • **This course aim to introduce students to the methods of statistical mechanics and to lay the foundation for the application of these methods in other area of physics.** • **This course aims at a better understanding of physical meaning of atomic spectroscopy that leads to a better understanding of the atomic structure**.
3. Intended learning outcome	
a) Knowledge and understanding	A1: Recognize the concepts of interference and diffraction. A2: Describe interference produced with Michelson's interferometer.

	A3: Define Rayleigh's, criterion for resolving two near-by objects A4: Define ensemble, density of state, statistical weight, quantum statistics techniques. A5: Define the physical meaning of spectra and spectral analysis.
b) Intellectual skills	B1: Analyze Young's double slit experiment and to solve related problems as found in the text. B2: Analyze the diffraction pattern from a single slit and to solve related problems as found in the textbook. B3: Discuss Statistical mechanics of isolated systems. B4: Compare between interacting systems and isolated systems. B5: Show the difference between both theoretical and practical parts of course.
c) Professional skills	C1: Dissect how the interference in thin films can be represented, and an appreciation of the key concepts relating to the Reflection theory. C2: prepare to produce a well-structured solution, with clearly-explained reasoning and appropriate presentation. C3: Conduct the physical knowledge to analyze a suitable technique to solve problems. C4:.Examine some physical problems helping in

	understanding the course parts. C5: Prepare to create theoretical dealing of the topic under investigation.
d) General skills	D1: Use of technology tools: as 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 to improve Self-learning: - study independently, set realistic targets and plan work and time to met targets within deadlines. D4: Write reports and 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	**- concepts of interference, Interference of Polarized Light, Multiple Slit Interference and Interference Gratings.** **- Basic information from the theory of probability and Maxwell relation.** **- X-ray- X-ray diffraction- The Compton effect.** **- Wave nature of particles- Electron diffraction and Heizenberg uncertainty principle.** **- Thin Films and Interferometers.** **- Maxwell Boltzman, Fermi- Dirac and Bose Einstein distributions.** **- Thomson's model. Rutherford's Model- Hydrogen atom spectrum and Bohr's atomic model.** **- Synthesis and Analysis of Colour.** **Diffraction Through One Slit and Polarization by Reflection.** **- Thermodynamic laws and Thermodynamics potential.** **- Frank- Hertz Exp- Sommerfield Model- Many electron atoms and Stern-Gerlach experiment.** **- The Eye , Refract meter Electron microscopes, colour measurements and spectrophotometer.** **- Relation between statistical mechanics and thermodynamics and Entropy in thermodynamic and statistical.**

	- Pauli Exclusion Principle- The normal and Anomalous Zeeman Effect and Magnetic properties of atoms.
5. Teaching and learning methods	5.1. lecture using PowerPoint presentations. 5.2. practical sections. 5.3. independent reading throughout basic text books and research papers.
6. teaching and learning methods for students with special needs	Data show – computer – blackboard – Student oral presentations
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.

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: 200 Practical Examination: 30 Semester Work: 10 Total: 250
8. List of Textbooks and References:	----------
a) Course Notes	Lecturer private notes
b) Required Books (Textbooks)	1. ***University Physics with Modern Physics (12th edition, 2000)*** 2. ***Perspectives of Modern Physics, Arthur Beiser, McGraw-Hill,1969.*** 3. ***Physics, Part-I, Serway.*** 4. ***Physics, Part-I, E.Gettys, J.Keller*** 5. ***Copyright c2002-2004 Benjamin Crowell All rights reserved. rev. April 1, 2006***

c) Recommended Books	*6.* **Feynman Lectures on Physics Volumes 1,2,3 - Feynman, Leighton and Sands**
d) Periodicals, web sites,…,etc	http://electron9.phys.utk.edu/optics421/modules/m5/Interferometers.htm http://www.appliedelectronics.com/ http://www.appliednn.com/ http://cdsads.u- http://hyperphysics.phy-astr.gsu.edu/Hbase/phyopt/michel.html http://electron9.phys.utk.edu/optics421/modules/m5/Interferometers.htm http://zebu.uoregon.edu/~soper/Light/atomspectra.html http://jersey.uoregon.edu/vlab/elements/Elements.html

Course Instructor: Dr. Adly helmy Dr. Shaker Ebrahim
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Head of Department

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

Prof. Dr. El. M. Elmaghrby