



Course specification

University/Academy: Damanhour

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY (301)	Course title: Advanced atomic physics	Academic year/level: 2009-2010 3 rd year (first term)
Specialization: Mathematics and physics	No. of instructional units: lecture <input type="text" value="2hrs/week"/> tutorial <input type="text" value="--hrs/week"/> practical <input type="text" value="3hrs/week"/>	

2. course Aim	<ul style="list-style-type: none">The course introduces the fundamental of atomic physics and provides a solid foundation for follow up on advanced courses in nuclear and solid state physics.
3. Intended learning outcome	
a) Knowledge and understanding	A1: Describe the Structure of the atom and generation of X-rays. A2: Recognize the Effect of external magnetic fields on atoms. A3: Explain the historical development of atomic physics.
b) Intellectual skills	B1: Discuss X-ray production B2: Analyse Normal and anomalous Zee man effects. B3: Analyze atomic structure of Hydrogen atom and



	many electron atoms.
c) Professional skills	<p>C1: Dissect Hydrogen atom spectrum.</p> <p>C2: examine the difference between Thomson's and Rutherford's models.</p> <p>C3: conduct the physical knowledge to analyze a suitable technique to solve problems.</p> <p>C4: examine some physical problems helping in understanding the course parts.</p>
d) General skills	<p>D1: <u>Use technology tools like</u> internet/electronic resources to obtain subject specific information,. - use a number of computer packages to present information.</p> <p>D2: <u>he ability to work in groups</u> work with other as a part of a team to collect data and/or to produce reports and presentations.</p> <p>D3: The ability to communicate improves self-learning: - study independently, set realistic targets and plan work and time to met targets within deadlines.</p> <p>D4: Write reports and Problem solving: - Regular problem exercises and example will give students the chance to develop their theoretical understanding and problem.</p> <p>D5: The ability to communicate: Students will have write reports and give oral presentation.</p>
4. course content	<ul style="list-style-type: none">- Historical background- Thomson's and Rutherford's Models.- Hydrogen atom spectrum.- Bohr's atomic model - Frank- Hertz Exp .



	<ul style="list-style-type: none"> - Sommerfield Model - Vector model - Many electron atoms. - Stern-Gerlach experiment - Pauli Exclusion Principle. - Periodic table - X-rays. - Electronic configuration – normal and Anomalous Zeeman Effects. - Doublet fine structure.
5. Teaching and learning methods	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 1- Over head projector 2- appropriate teaching accommodation and Computers 3- Laboratory with computer terminal.
7. Student Assessment	<ul style="list-style-type: none"> 7-1. Semester Work. 7-2. Mid-Term Examination . 7-3. Practical Examination 7-4. Final Term Examination
a) Procedures used:	<ul style="list-style-type: none"> 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:	Assessment 1: Semester work 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 <hr/> Total: 150
8. List of Textbooks and References:	-----
a) Course Notes	Lecturer private notes
b) Required Books (Textbooks)	1- An Introduction to atomic and nuclear physics by H.Semat. 2- Advanced Physics by Kieth Gibbs. 3- Modern Physics by Weidner and sells.
c) Recommended Books	-----
d) Periodicals, web sites,...,etc	-----

Course Instructor: Dr. Nazeh

Head of Department

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

Prof. Dr. El. M. Elmaghrby