



Course specification

University/Academy: **Damanhour**

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY 453	Course title: Bio physics and radiation	Academic year/level:2010/2011 4 th year (first term)
Specialization: Special zoology	No. of instructional units: lecture <input type="text" value="2hrs/ week"/> practical <input type="text" value="3hrs/ week"/>	

2. course Aim	<ul style="list-style-type: none">• The course introduces the interaction of radiation with matter and biological systems besides the radiation detection and dosimetry.• The course provides the fundamentals of application of physics in biological systems.
3. Intended learning outcome	
a) Knowledge and understanding	A1: Define the interaction of radiation with matter. A2: Recognize the radiation detection and detectors. A3: Describe the biophysics- biophysical systems. A4: Recognize the Biophysics techniques.
b) Intellectual skills	B1: Discuss Radiation detection and detectors.



	<p>B2: Discuss Biological effects of radiation.</p> <p>B3: Show the difference between External and internal hazards of radiation sources.</p> <p>B4: Analyze the applications of Bioelectric potentials.</p> <p>B5: Show the Physical properties of living cells with emphasis on passive electrical properties.</p>
c) Professional skills	<p>C1: Dissect storage of radioactive materials and disposal of radioactive wastes.</p> <p>C2: Dissect Biomechanics of living cells, forces, in the body Physics of some parts of human body.</p> <p>C3: Dissect the physical knowledge to analyze a suitable technique to solve problems.</p> <p>C4: Dissect some physical problems helping in understanding the course parts.</p>
d) General skills	<p>D1: Use of technology tools: - use the internet/electronic resources to obtain subject specific information, - use a number of computer packages to present information.</p> <p>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.</p> <p>D3: Write reports improving 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</p>



	<p>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">- Interaction of radiation with matterThe interaction between charged particlesGamma radiation and neutrons with matter- Introduction, Electrode technique.- Methods of radiation- Detection and radiation detectors.- Fundamentals of electrochemistry and Resting potential.- Biological effects of ionizing radiations, genetic and somatic effects.- Units of radiation.Action potential and Surface potentials.- External and internal hazards of radiation-Sources and radiation protection.- Treatment of contaminated personsRadiation contamination.- Storage of radioactive materials.- Physical properties of living cells and Bio mechanics.
5. Teaching and learning methods	<p>5.1. Teaching will be by lectures, exercises .</p> <p>5.2. All learning outcomes are delivered through lectures.</p> <p>5.3.All lectures and worked examples are given from the lecturer private notes.</p> <p>Instructional Methods include:</p> <ul style="list-style-type: none">• 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,



	<p>university, and community based partners</p> <ul style="list-style-type: none"> • 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	<p>1- Over head projector</p> <p>2- appropriate teaching accommodation and Computers</p> <p>3- Laboratory with computer terminal.</p>
7. Student Assessment	<p>7-1. Semester Work.</p> <p>7-2. Mid-Term Examination .</p> <p>7-3. Practical Examination</p> <p>7-4. Final Term Examination</p>
a) Procedures used:	<p>7.1. Reaserch and presentation to assess skills of presenting data and discussion.</p> <p>7.2. Mid-Term Examination To accesses ability to continue in course</p> <p>7.3. practical exam. To access professional and practical skills.</p> <p>7.4. written exam. To accesses ability to remember &.understand scientific background. &.understand scientific background.</p>
b) Schedule:	<p>Assessment1:Semesterwork Week: 4-8</p> <p>Assessment 2: Mid-term Week: 10</p> <p>Assessment 3: Practical final Week: 12</p> <p>Assessment 4: Written final Week: 14</p>
c) Weighing of Assessment:	<p>Mid-Term Examination: 10</p> <p>Final-Term Examination: 100</p>



	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- Principles of biophysics, Fadel M.Ali, 2003 2- Biophysics. An introduction, Rodney Cottenill, 2003, John Wiley & Sons LTD 3- Atoms, Radiation and Radiation protection, James E.Turner. 1985 4- Interscience publication, John Wiley & Sons, Inc.
c) Recommended Books	-----
d) Periodicals, web sites,...,etc	-----

Course Instructor: Dr. El maghrby Mohamed El maghrby

Head of Department

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

Prof. Dr. El. M. Elmaghrby