Course specification

University/Academy: Damanhour

Faculty/Institute: Science

Department: Physics

1. course Data:		
Course code: PHY (102)	Course title: General physics (2)	Academic year/level: 2007-2008 1st year (second term)
Specialization: Physical science group	No. of instructional units: lecture 3hrs/ week tutorial 1hrs/ week practical 3hrs/ week	

2. course Aim	• The course introduces the students to the nature and the theories of light. Also students have to recognize the fundamentals of light reflection and refraction at different surfaces and applications of them in connection with optical instruments. • It provides courses in classical aspects of the propagation of light and, introduces basic conceptsin geometrical optics. • The course introduces the fundamental laws of electricity and magnetism, the ability to apply electricity and magnetism concepts in different sciences and to develop techniques used in the solution of simple field problems. • The course introduces the students to the

	phenomena associated with heat and its effect on materials and phase transformations.
3. Intended learning outcome	
a) Knowledge and understanding	A1: Recognize nature of theories of light. A2: Define the principles that describe the propagation of light in free space and lens/mirror systems. A3: State the basic laws of electricity and magnetism A4: Shows a systematic analysis method to calculate currents and voltages in dc circuits. A5: Describe the Concept of heat as a form of energy together with concept of temperature and its measurements.
b) Intellectual skills	B1: Analyze the calculations to determine the properties of simple optical systems. B2: Create ray diagrams for use in solving simple geometrical optics problems. B3: Use theoretical principles of basic electricity and magnetism B4: Determine the properties of simple heat systems. **B5:** creates ray diagrams for use in solving simple heat problems.
c) Professional skills	C1: Use instruments like geometrical optics experiments and sampling program in the laboratory . C2 : Use instruments in laboratory. C3: Dissect the ray diagrams for use in solving simple geometrical optics problems. C4: Examine the skills requiring the application of mathematical techniques and the basic principles of electricity and magnetism.

	C5: Elicit quantitative date by using software package.
d) General skills	D1: Use of new technology 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: Self-learning: - study independently, set realistic targets and plan work and time to met targets within deadlines. D4: Write reports: - 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	**-The nature and propagation of light, theories of light and reflection and refraction at plane surfaces.** **-Electric Fields and Gauss`s Law.** **- BASIC DEFINITIONS AND UNITS.** **-Derivation of the laws of reflection and refraction from corpuscular principle and Huygen's principle, Snell's law and total reflection.** **- Electric Potential and Capacitance and Dielectrics.** **- Heat and Thermodynamics , Kinetic Theory and Specific Heat.** **- Refraction by a prism, Dispersion, Rain bow, Brewster's law and Plane mirror, Spherical surface.** **- Capacitors with Dielectrics, Electric Dipole in an Electric Field, An Atomic Description of Dielectrics and Electric Current, Resistance and Ohm`s Law.** **- Behaviour Under Applied Heat, Critical Point And Effects Of Pressure On Saturation Conditions,Vapour Quality And Moisture Content, Thermal expansion of solids and Liquids.** **Reflection and refraction of spherical waves at surfaces and spherical wave.** **- A Model For Electric Conduction, Resistance and Temperature, Superconductors, Electric Energy and Power.** **- Effect of heat on materials: Change of state (phase rule and phase diagram),** **- Thin lenses and Thick lenses.** **- Electromotive Force, Resistors in Series and in Parallel.** **- change in size (thermal expansion with some applications and anamolous behavior of water) and thermal stresses and change in colour.** **- Lens Aberrations and Camera.** **The Magnetic Field, Magnetic Force Acting on a Current-Carrying Conductor,**

	Torque on a Current Loop in a Uniform Magnetic Field and Motion of a Charged Particle in a Uniform Magnetic Field. **- HEAT TRANSFER Radiation Conduction Convection and Mechanisms of heat transfer (simple and compound walles) and thermal conductivity** **- The eye, Microscopes and Telescopes.** **- The Biot Savart Law, Ampere's Law, The Magnetic Field of a Solenoid,Gauss's Law in Magnetism, Displacement Current and the Generalized Ampere's Law, Faraday's Law of Induction, Motional EMF, Lenz's Law.** **- Kinetic theory of gases, Kinetic calculation of pressure and temperature and Maxwell-Boltzmann distribution of molecular speed.**
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: 150 Practical Examination: 30 Semester Work: 10 Total: 200
8. List of Textbooks and References:	----------
a) Course Notes	Lecturer private notes
b) Required Books (Textbooks)	1- Book 4 in the Light and Matter series of free introductory physics textbooks Copyright c2002-2004 Benjamin Crowell All rights reserved. rev. April 1, 2006 2- " Physics Principles with applications ", D.C Giancoli, USA. 3- " University physics", F.W. Sears, M.W. Zemasky and H.D. Young,Wesley series in physics, USA
c) Recommended Books	1- Feynman Lectures on Physics Volumes 1,2,3 - Feynman, Leighton and Sands 2-" Physics for Scientists and Engineering ", F.W Sears and R.J

	Beichner, Saunders college publishing.
d) Periodicals, web sites,…,etc	http://www.physics.upenn.edu/courses/gladney/phys151/lectures/lecture_apr_14_2003.shtml http://members.tripod.com/~IgorIvanov/physics/optics-geom.html- *http://www.mip.berkeley.edu/physics/bookddx.html* *http://technorati.com/videos/youtube.com%2Fwatch%3Fv%3DWxitGR-9qGA* http://www.phy.duke.edu/courses/

Course Instructor: Dr. Hussien Ali Mutaweh
Dr. Elmaghrby Mohammed Elmaghrby
Dr. Yehya keshk

Head of Department

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

Prof. Dr. El. M. Elmaghrby