

A brief Course Description

Course Name: General Physics			
Course Code	Phys 101 T		
College	Science		
Department/ Program	Physics		
Year / Level:	First/ First		
Credit Hours	3 credits (2+2)		
Contact Hours	Lecture:2	Lab/Tutorial2	Training: 0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	none		
Course Description:	This course covers topics in units and measurements, motion in one dimension, vectors, Newton's laws of motion and applications, circular motion, work and energy, elasticity, waves and oscillations, temperature and heat ,properties of fluids mirrors and lenses. Students study basic laws in each subject and their applications.		

A brief Course Description

Course Name: Vibrations & Waves			
Course Code	Phys 131T		
College	Science		
Department/ Program	Physics		
Year / Level:	First/ second		
Credit Hours	3 credits		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys101		
Co-Requests:	none		
Course Description:	<p>This course covers topics such as transverse and longitudinal waves. Wave propagation and wave equation in 1D, 2D and 3D. Free, forced and damped vibrations, travelling and standing waves, interference, diffraction and superposition of waves, speed and intensity of sound waves, Doppler effect, ultrasound. X-ray diffraction, diffraction by crystals. Water waves, and applications.</p>		

A brief Course Description

Course Name: Thermodynamics			
Course Code	Phys 141T		
College	Science		
Department/ Program	Physics		
Year / Level:	First/ second		
Credit Hours	3 credits		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys101T		
Co-Requests:	none		
Course Description:	<p>This course introduces Some concept and definition of thermodynamic systems- macroscopic versus microscopic point of view. Properties of pure substance- vapor-liquid- solid phase equilibrium in pure substance-equation of state-ideal gases. The zeroth law in thermodynamics.</p> <p>Internal energy, work and heat. The First Law of thermodynamics. Enthalpy Heat capacity, specific heat and latent heat. Isolated, isothermal and adiabatic processes and transfer of energy. Reversible and irreversible processes. Entropy; disorder on a microscopic scale. The Second Law; entropy as a state function.. Ideal adiabatic expansion. The Carnot heat engine, refrigerators and heat pumps. Combined First and Second Laws. Kinetic theory for gases. Equilibrium between phases. Phase diagrams. Clausius-Clapeyron equation. The third law of thermodynamics and absolute entropy</p>		

A brief Course Description

Course Name: Mechanics – I			
Course Code	Phys 211 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second / Third		
Credit Hours	3 credits (2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys101T - MaSc 101		
Co-Requests:	none		
Course Description:	<p>This course covers a wide range of topics including vector analysis. Motion in one dimension and free fall. Newton's laws of motion. Friction force. Motion in two dimensions and projectile motion. Circular motion. Work and kinetic energy. Potential energy and conservation laws. Impulse and linear momentum. Elastic and inelastic collisions. Angular momentum and torque. Conservation of angular momentum. Centre of mass of a system of particles of continuous mass distribution. Rigid body motion. Moments and products of inertia... Angular momentum and kinetic energy of a rigid body in terms of angular velocity and moment of inertia. Central forces. Newton's law of gravity and inverse square law. Kepler's laws.</p>		

A brief Course Description

Course Name: Physics lab 1(Electricity and Mechanics)			
Course Code	Phys 291 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Third		
Credit Hours	1 (2+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys221T		
Course Description:	<p>This course includes experiments in mechanics, electricity, and magnetism. Electrical experiments, including Ohm's law, connecting resistors in series and parallel, Coulomb's law (force between two charges), Kirchhoff's law and capacitors. Mechanics experiments include equilibrium of forces, motion in one dimension, rotational motion and inertia.</p>		

A brief Course Description

Course Name: Fundamentals of electromagnetism			
Course Code	Phys 221 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Third		
Credit Hours	3 (3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys101T		
Co-Requests:	Phys 291T		
Course Description:	This course covers topics such as the charge and electric power, Coulomb's Law, electric field, Gauss's law, voltage, capacitors, resistors and direct Current circuits, Kirchhoff's rules and RC circuits, magnetic force, magnetic field, induction and inductance, magnetic materials.		

A brief Course Description

Course Name: Optical Physics			
Course Code	Phys 261 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Third		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys131T		
Co-Requests:	Phys292T		
Course Description:	<p>This course covers basic optical theory (both geometric and physical (wave) optics) and its components. Geometrical optics deals with the treatment of light as a ray and will help the student to understand the basics of light reflection and refraction. These principles will be applied to the study of image formation, lenses, mirrors ,aberrations, prisms, fibers, optical system design and optical instruments. Physical optics introduces the wave nature of light and the consequences of this behavior. Topics studied include interference, diffraction , polarization, interferometry, spectroscopy, etc</p>		

A brief Course Description

Course Name: (Optical Physic) Physics lab 2			
Course Code	Phys 292 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Third		
Credit Hours	1(2+0)		
Contact Hours	Lecture:	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys261T		
Course Description:	This course includes light experiments including refraction, interference, diffraction, polarization, and the speed of light.		

A brief Course Description

Course Name : Mechanics – II			
Course Code	Phys 212 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Fourth		
Credit Hours	3 (2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys211-MaSc 242		
Co-Requests:	none		
Course Description:	<p>This course provides a continuing study of the mechanics-I . Dynamics of a system of particles. Constraints, degrees of freedom, and generalized coordinates. D'Alembert's principle and Lagrange's Equations. Hamilton's Principles and Euler-Lagrange equation. Hamilton's Equations of Motion. Canonical Transformation The Kinematics of Rigid Body Motion. Small Oscillations. In order to get most out of this class, you should be familiar with the calculus of functions with many variables, as well as with ordinary and partial differential equations..</p>		

A brief Course Description

Course Name : Electromagnetism -I			
Course Code	Phys 222 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Fourth		
Credit Hours	3 (0+3)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 221T		
Co-Requests:	Phys293T		
Course Description:	This course provides a continuing study of Fundamentals of electromagnetism. Topics include: Time Varying Electromagnetic Fields: Electromagnetic induction, Faraday's law, Inductance, Energy, forces and Magnetic circuits, AC current.		

A brief Course Description

Course Name : (Electromagnetism) Physics lab 3			
Course Code	Phys 293 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Second/ Fourth		
Credit Hours	1(2+0)		
Contact Hours	Lecture:	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys222T		
Course Description:	This course includes experiments in electricity, magnetism, and heat, which is the study of the magnetic field resulting from the passage of electric current in some conductors as well as electrical induction, transformers, alternating current circuits, and some heat experiments.		

A brief Course Description

Course Name : Modern Physics			
Course Code	Phys 351 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Fifth		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 131T-Math 101T		
Co-Requests:	Phys394T		
Course Description:	<p>This course deals primarily with the crucial developments in physics that occurred in the late 19th and early 20th centuries. This course will highlight the divergences between classical and modern physics. Topics include: Special Relativity, Blackbody Radiation, Photoelectric Effect, Compton Effect and The pair production. Matter Waves. Heisenberg Uncertainty Principle. Introduction to the Atom(Atomic Structure). Line and Emission Spectra. Bohr Atom. X-rays spectrum quantization.</p>		

A brief Course Description

Course Name : (Modern Physics) Physics lab 4			
Course Code	Phys 394 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Fifth		
Credit Hours	1(2+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys351T		
Course Description:	This course includes experiments in (modern physics) such as determining the characteristic charge value of an electron e / m , an oil drop of a milican, the photoelectric effect, black body radiation, X-rays, Palmer series of various elements and finding some constants using a diffraction grating.		

A brief Course Description

Course Name : Mathematical Physics (1)			
Course Code	Phys 302 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Fifth		
Credit Hours	3credit (2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 211T-MaSc 225T		
Co-Requests:	none		
Course Description	<p>This course deals with the concepts and mathematical methods used in the various branches of physics such as vectors, complex numbers, and applications. Curvilinear coordinates and transformations –gradient, divergence, and curl and applications. Fourier Series and its properties (with Application to physics). Fourier and Laplace Integral transforms (with Application to physics). Special functions such as gamma and beta functions - applications to solve some physical problems.</p>		

A brief Course Description

Course Name : Computer Application for Physics			
Course Code	Phys 303T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ fifth		
Credit Hours	3(2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys101T- MaSc103T		
Co-Requests:	none		
Course Description:	Getting started with MATLAB and MATLAB environment. Basic arithmetic – calculus-complex numbers. Matrix computations and linear algebra. Polynomials and rational functions. Solution of ODE and PDE. Graphics in MATLAB. Programming and simulation.		

A brief Course Description

Course Name : Electronics			
Course Code	Phys 323 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Fifth		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 222		
Co-Requests:	Phys395T		
Course Description:	<p>This course explicitly deals with the physics of operation of electronic devices. The fundamentals of discrete semiconductor devices and their applications. The chemical, electronic, and physical properties of semiconductors are examined. Basic operating principles and models of semiconductor devices including the $p-n$ junction, the Schottky barrier, the bipolar transistor and the field effect transistor are quantitatively investigated. Basic models for optoelectronic devices including photo detectors and lasers are presented. The use of semiconductor devices in analog circuits, digital circuits, and optoelectronic applications are analyzed.</p>		

A brief Course Description

Course Name : (Electronics) Physics lab 5			
Course Code	Phys 395 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Fifth		
Credit Hours	1(2+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys323T		
Course Description:	This course includes electronics experiments and includes: the characteristics of semiconductor diodes of all kinds, transistors of all kinds, as well as operations amplifier.		

A brief Course Description

Course Name: Electromagnetism -II			
Course Code	Phys 324 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ Sixth		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 222T -Phys302T		
Co-Requests:	none		
Course Description:	<p>This course provides a continuing study of Electromagnetic –I. Topics include : vector-calculus based description of static electric fields in cases of fixed charges, conductors, and dielectrics. Descriptions of moving charges (for the case of steady electric currents) and resulting static magnetic fields are also presented. This also serves as an introduction to the Maxwell equations and electromagnetic field theory. Problem solving makes frequent use of symmetry and invariance. At times it also involves computer analysis.</p>		

A brief Course Description

Course Name : Quantum Mechanics(1)			
Course Code	Phys 313 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ sixth		
Credit Hours	3(2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 351-phys302		
Co-Requests:	none		
Course Objectives:	<p>This course covers the following topics: The basic postulates of quantum mechanics (de Broglie Wave-particle duality -- Dynamical variables -- Operators - Probability distributions -- Commutation relations -- Uncertainty principle -- Time dependence wave function). Transfer from Quantum Mechanics to Classical Mechanics. The 1-D Schrodinger equations (time-dependent and time-independent - Boundary conditions - Examples (potential Barrier , Potential Well, And Periodic Potential).. Quantum mechanical tunneling. The harmonic oscillator. The 3-D Schrodinger equations (Wave equations -- Particle in Box - Degeneracy -- Cartesian and spherical polar coordinates -- Hydrogen atom) Angular momentum (The angular-momentum operators -- The Eigen values and Eigen functions)</p>		

A brief Course Description

Course Name : Solid state Physics			
Course Code	Phys 371 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ sixth		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys351T-phys323T		
Co-Requests:	Phys396		
Course Description:	<p>This course includes theoretical description of crystal and electronic structure, lattice dynamics, and optical properties of different materials (metals, semiconductors, dielectrics, magnetic materials and superconductors) based on the classical and quantum physics principles. Several advanced experiments of X-ray diffraction, Raman Scattering, Photoluminescence, etc., will be carried out in the Research Physics Lab followed by their theoretical discussion. .</p>		

A brief Course Description

Course Name : (Solid) Physics lab 6			
Course Code	Phys 396 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Third/ sixth		
Credit Hours	1(2 +0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys371T		
Course Objectives:	Solid-state physics experiments include crystalline models, X-ray diffraction, electron diffraction, temperature effect on both the semiconductor and conductive material, optical conductivity determination, optical resistance, Hall effect, and characteristic curve properties of the semiconductor diode.		

A brief Course Description

Course Name : Nuclear physics (1)			
Course Code	Phys 481 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ seventh		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys313		
Co-Requests:	none		
Course Description:	<p>The goal of this course is to identify the nuclear characteristics , nuclear stability and nuclear radioactive decay (laws and types).Radiation: natural radiation chains , radioactive decay of α-particles, radioactive decay of β-particles, and electron capture, radioactive decay by γ-rays, internal transformation .Nuclear models: nuclear shell model , liquid drop model , Fermi gas model . Types of nuclear interactions , interaction cross sections and conservation laws. Nuclear fission : fission process - the liberated energy , spontaneous and induced fission , the activation energy , the properties of fission , fission reactions serial . And nuclear fusion : some basic fusion reactions and properties, fusion reactions in the sun and stars. Accelerators and nuclear reactors.</p>		

A brief Course Description

Course Name : Atomic and Molecular Spectroscopy			
Course Code	Phys 452 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ seventh		
Credit Hours	3(3+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys313		
Co-Requests:	Phys497T		
Course Description:	<p>The goal of this course is to illustrate the spectroscopy of small molecules in the gas phase notation of atomic and molecular spectroscopy. Spin –Orbit Interaction in H-atom , Pauli Exclusion Principle. Electron configuration in many electron atoms, Atoms with a valance electron , Atoms with two valance electrons (ll coupling, ss coupling , LS coupling and jj coupling). The interaction of many-electron atoms with magnetic fields, Zeeman Effect, Stark Effect. Molecular Structure. Electronic, vibrational and rotational energy levels of a diatomic molecule.</p> <p>Spectroscopic techniques: Optical spectroscopy , IR spectroscopy, Raman spectroscopy, Magnetic Resonance , Excitation Sources, and data acquisition systems</p>		

A brief Course Description

Course Name: BioPhysics			
Course Code	Phys 456 T		
College	Science		
Department/ Program	Physics		
Year / Level:	4/7		
Credit Hours	3 hours		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training: 0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input type="checkbox"/> Department Requirement <input checked="" type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 351T and Bio101T		
Co-Requests:	-		
Course Objectives:	<p>This course aims to introduce the principles of biomechanics, methods of measuring blood pressure, pressure of blood vessel walls, flow of viscous and non-viscous fluids, blood flow in arteries, veins and capillaries, explanation and interpretation of natural processes of biological systems using principles of physics, radiological and nuclear interpretation, research In studying the organs of the organism, the human body adapts to all the conditions of the abnormal life</p>		

A brief Course Description

Course Name : (Spectra)Physics lab 7

Course Code	Phys 497 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ seventh		
Credit Hours	1(2+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	none		
Co-Requests:	Phys452T		
Course Description:	This course includes experiments in the physics of atomic and molecular spectra, including the Zeeman effect, the spectrum arising from the flame, calculation of wavelengths by calibration, verification of the existence of discrete levels of atomic energy, the study of the inverse square law of the microwave, and the Stern Gerlach experiment.		

A brief Course Description

Course Name : Statistical and thermal physics

Course Code	Phys 442 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ seventh		
Credit Hours	3(3+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys141T-Phys313T-Phys371T		
Co-Requests:	none		
Course Description:	<p>This course deals with the basic concepts of statistical physics and their application to simple systems such as ideal gas, specific heat of solids, and blackbody radiation, the development of mechanical thermology and mechanical statistics, the concept of heat, the laws of thermodynamics, and the concept of chaos and free energy. And applications on phases equilibrium, multi-phase systems, chemical interaction and thermal-mechanical cycles, application of statistical physics principles to selected physical systems and statistical distributions, which include: Maxwell - Boltzmann distribution, Bohr - Einstein distribution and Fermi - Dirac distribution with their applications and computational applications for each of Free energy, chaos and magnetism for conventional and quantitative systems.</p>		

A brief Course Description

Course Name : (Nuclear) Physics lab 8			
Course Code	Phys 498 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ seventh		
Credit Hours	1(2+0)		
Contact Hours	Lecture:0	Lab/Tutorial:2	Training:0
Language	Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys313T		
Co-Requests:	none		
Course Description:	This course includes experiments in simple and safe nuclear physics, and includes the study of the characteristics of radiation detection devices available in the laboratory (Geiger-Muller counter), as well as the characteristics and absorption of gamma and beta rays. This precedes the definition of the most important practical principles used in dealing with monitoring devices and radioactive materials.		

Course Name: Scientific research skills	
Course Code	Phys 490 T

A brief Course Description

College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ Seventh		
Credit Hours	2(2+1)		
Contact Hours	Lecture:1	Lab/Tutorial:2	Training:0
Language	Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 313T		
Co-Requests:	none		
Course Description:	<p>This course aims to: Define the concept of scientific research ethics and scientific trust - apply the concept of how to conduct research literature, how to read a scientific paper, prepare a research proposal on a specific topic, write reports - use different sources of information and how to quote them - prepare and present posters, give a lecture, Time management, team work - collecting and analyzing data using modern statistical software - operating modern scientific devices and applying modern programs used in analyzing scientific results such as modeling and simulation. Brief description of the course.</p>		

A brief Course Description

Course Name : Plasma Physics			
Course Code	Phys 453 T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ eight		
Credit Hours	2(2+0)		
Contact Hours	Lecture:3	Lab/Tutorial:0	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys 324T		
Co-Requests:	none		
Course Description:	Topics include : What is plasma - Plasma in nature and laboratory – Plasma parameters – charged particle motion in electric and magnetic field – Plasma models (fluid and kinetic) – Dispersion, resistivity, and waves in plasma – Plasma applications in daily life		

A brief Course Description

Course Name : Mathematical Physics			
Course Code	Phys 404T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ eight		
Credit Hours	3(2+2)		
Contact Hours	Lecture:2	Lab/Tutorial:2	Training:0
Language	English		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys302T		
Co-Requests:	none		
Course Description:	This course deals with understanding the mathematical methods that are used in dealing with advanced physical issues in the framework of functions and complex numbers: (complex functions and integrals - some special functions used in physics - solving ordinary differential equations by mathematical methods based on series - solving partial differential equations that describe some physical phenomena. - Integrative transfers.		

A brief Course Description

Course Name : Graduation project			
Course Code	Phys 499T		
College	Science		
Department/ Program	Physics		
Year / Level:	Fourth/ eight		
Credit Hours	2(2+1)		
Contact Hours	Lecture:1	Lab/Tutorial:2	Training:0
Language	English and Arabic		
Track (Select)	<input type="checkbox"/> University Requirement <input type="checkbox"/> College Requirement <input checked="" type="checkbox"/> Department Requirement <input type="checkbox"/> Elective Course		
Pre-requisites Course:	Phys490T		
Co-Requests:	none		
Course Description:	This course aims to guide the student to perform a scientific project in selected areas of theoretical or experimental physics and to train her to write a scientific report using the necessary references.		