د ـ مقررات البرنامج :

أولاً: مقررات إلزامية:

كود أو رقم المقرر	اسم المقرر	عدد الوحدات	عدد الساعات الأسبوعية			الفرقة والمستوى	الفصل الدراسى
			نظرى	تمرين	عملى		
ك101	كيمياء عامة غير عضويه / كيمياء عامه	8	4	0	4	الأولى	الأول
ف101	ضوء- كهربية	9	4	1	4		
ر101	تفاضل وتكامل	5	3	2	0		
ر102	هندسة- استاتيكا	6	4	2	0		
ك102	كيمياء عامة	6	2	0	4		الثانى
ك103	كيمياء عضوية	2	2	0	0		
ف102	حرارة وخواص مادة - مغناطيسية	9	4	1	4		
ر103	تفاضل عالي - جبر	7	4	3	0		
ر104	ديناميكا	5	3	2	0		
ل102	لغة انجليزية	3	2	1	0		ممتد

كود أو رقم المقرر	اسم المقرر	عدد الوحدات	عدد الساعات الأسبوعية			الفرقة والمستوى	الفصل الدراسى
			نظرى	تمرين	عملى		
ر201	معادلات تفاضلية	3	2	1	0	الثانيه	الأول
ر202	مقدمة في الاحصاء	3	2	1	0		
ر203	تحليل رياضى او حقيقى - استاتيكا	6	4	2	0		
ف201	ديناميكا حرارية	5	2	1	2		
ف202	دوائر كهربيه وكهرواستاتيكيه	9	4	1	4		
بدون	حقوق الانسان والمبادئ القانونيه العامه	2	2	0	0		
ر204	جبر خطي	3	2	1	0		الثانى
ر205	هندسة فراغية تحليلية	3	2	1	0		
ر206	ميكانيكا	6	4	2	0		
ف203	جوامد والكترونيات	7	2	1	4		
ف204	فيزياء ذريه - ضوء فيزيائى	7	4	1	2		
بدون	حاسب	3	1	0	2		
ل202	لغة انجليزية	3	2	1	0		ممتد

كود أو رقم المقرر	اسم المقرر	عدد الوحدات	عدد الساعات الأسبوعية			الفرقة والمستوى	الفصل الدراسى
			نظرى	تمرين	عملى		
ف301	الكترونيات	2	2	0	0	الثالثه	الأول
ف302	فيزياء رياضية	3	2	1	0		
ف303	النظرية الكهرومغناطيسيه	4	3	1	0		
ف304	ديناميكا حرارية واحصائية	3	2	1	0		
ف305	فيزياء حديثة	2	2	0	0		
ف306	جوامد	3	3	0	0		
ف322	فيزياء تجريبية	8	0	0	8		
بدون	حاسب	3	1	0	2		
ف307	ميكانيكا الكم	4	3	1	0		الثانى
ف308	فيزياء ذرية ومفاعلات	2	2	0	0		
ف309	فيزياء نووية	3	2	1	0		
ف310	ديناميكا حرارية واحصائية	2	2	0	0		
ف311	طرق الفيزياء التجريبية	2	2	0	0		
ف312	فيزياء رياضية	3	2	1	0		
ف323	فيزياء تجريبية	8	0	0	8		
ل302	لغة انجليزية	3	2	1	0		ممتد
بدون	التدريب الصيفي	36	6	-	30		خلال الاجازة الصيفية

كود أو رقم المقرر	اسم المقرر	عدد الوحدات	عدد الساعات الأسبوعية			الفرقة والمستوى	الفصل الدراسى
			نظرى	تمرين	عملى		
ف401	ميكانيكا الكم	3	2	1	0	الرابعه	الأول
ف402	فيزياء ذرية	3	2	1	0		
ف403	جوامد واشباه موصلات	2	2	0	0		
ف404	اشعة ليزر وتطبيقاتها	3	2	1	0		
ف405	برمجه وفيزياء حسابية-فيزياء رياضية	6	5	1	0		
ف419	فيزياء تجريبية	8	0	0	8		
ف406	الكترودينامكا	4	3	1	0		
ف407	فيزياء البلازما	4	3	1	0		الثانى
ف408	فيزياء نووية	4	3	1	0		
ف409	مفاعلات	3	2	1	0		
ف410	ميكانيكا الكم	2	2	0	0		
ف420	فيزياء تجريبية	8	0	0	8		
بدون	بحث او مقال	2	2	0	0		
بدون	حاسب	3	1	0	2		
ل402	لغة انجليزية	3	2	1	0		ممتد

Courses Contents

مقررات الفرقة الأولى

كود المقرر : 101ك
اسم المقرر :كيمياء عامه
المحتويات :

Phyiscal Chemistry: Gaseous state, Thermochemistry, Chemical equilibrium, Solutions, Problems in physical Chemistry.
Inorganic Chemistry: Chemical Calculations, Atomic spectra and Quantum numbers, Properties of of periodic table, Chemical bonding, Practical part.

كود المقرر : 101ف
اسم المقرر : ضوء- كهربية
المحتويات :
الضوء

Nature of light, Refraction through lenses, Optical instruments, Dispersion, Photometry

الكهربيه

Charge and matter,Electric current, Electric field for a group of point, Electric field of continuous charges, Electric potential and applications, Condensers, Coulomb's law,Electric field, Electric dipole , Electric field flux and Gauss's law and its applications, capacitors, Introduction to electric current, DC circuits, DC circutes, DC network analysis, transient current.

كود المقرر : 101 ر
اسم المقرر : تفاضل و تكامل
محتويات المقرر

Limits and the continuity, Differential trigonometric functions, inverse trigonometric, Limited integration and unlimited, Logarithmic and exponential functions, Hyperbolic functions, Roll Theory and the average value and L'Hopital's rule, Applications Calculus maxima and minima and drawing the curves, Calculation of integration and its applications in the calculation of areas and volumes.

كود المقرر : 102ر
اسم المقرر : هندسه
محتويات المقرر

Polar and kartezip coordinates in the level systems, A straight line, Operations on the axes of coordinates, Pairs of lines , The circle, Cuttings cone: A – Parabola , The ellipse, Hyperbolic

كود المقرر : 102ر
اسم المقرر : استاتيكا
محتويات المقرر

Vectors, Two Dimensional Forces acting at a point, Moments and couple, The Plane Force acting on a Rigid Body, Fraction, Work and kinetic Energy, Potential Function.

كود المقرر : 102ك
اسم المقرر :كيمياء عامه
المحتويات :

Introduction of acidic radicals, Detection of dilute HCl group , Detection of H2SO4 group , Detection of miscellaneous groups , Scheme of general investigation of acidic radicals , Introduction of basic radicals , Detection of groups I, II-A, and II-B , Detection of groups III and IV, , Detection of groups V and VI , Scheme of general investigation of basic radicals , Detection of acidic and basic radicals of unknown salts, Analysis of cationic radicals in a mixture.

كود المقرر : 103ك
اسم المقرر :كيمياء عضويه
المحتويات :

Introduction to organic chemistry, Nomenclature, preparation and reactions of alkanes , Nomenclature, preparation and reactions of alkenes , Nomenclature, preparation and reactions of alkynes, Nomenclature, preparation and reactions of alcohols, Nomenclature, preparation and reactions of aldehydes and ketones , Nomenclature, preparation and reactions of ethers, Nomenclature, preparation and reactions of carboxylic acids, Nomenclature, preparation and reactions of carboxylic acid derivatives, Nomenclature, preparation and reactions of amines.

كود المقرر : 102ف
اسم المقرر : حراره و خواص ماده و مغناطيسيه
المحتويات :
الحراره و خواص الماده

Temperature and thermometers, Heat estimation, Thermal expansion, Change of phase, Heat transfer , Kinetic theory of gases, Units and dimensions Fundamental units - Derived units - Dimension theory and its applications Scaler and vectors -Linear motion - Planer motion - Newton`s second law, Simple harmonic motion -SimpMonent of inertia for some bodies- Simple pendulum - Some experiments, Hook`s law-Elasticity modulii-Relation between elasticity modulii-Stress-Strain curves-Some exp, Pressure-Pascal`s rule-Archimede`s rule-Bernoulli`s equation - Surface tension- Some exp., Bernoulli`s equation - Viscosity Poiseuill`s formula- Stokes law-Some experiments.

المغناطيسيه

Magnetic elements,angle of dip, The Biot-Savart law, Ampere's law , Applications of magnetic field:i-magnetic field due to a current in a straight conductor , Magnetic field of circular conductor,iii- magnetic field of a solenoid, Magnetic field of a toriod. The force between two complete circuits, Magnetic dipole, Tangent and Helmoholtz galvanometers, Charged particles in magnetic fields, Orbits of charged particles in magnetic fields,applications on motion particles in magnetic fields, i-Cyclotron,ii-q/m of electrons,iii-Hall effect,iv-mass spectrograph, Motion of a conductor in a magnetic field,Faraday law,Self iand mutual nductance, Inductors connection, Revision.

كود المقرر : 103ر
اسم المقرر : تفاضل عالي
محتويات المقرر

Polar coordinates and its applications, The function of two variables, continuity, the derivation and applications, Study of duo integration in different coordinates , Ailing integration , Leibniz's, Taylor and Maclaurin theories.

كود المقرر : 103ر
اسم المقرر : جبر
محتويات المقرر

Introduction to set theory, Relations and mapping functions, Introduction to mathematical logic, Mathematical induction, Partial fractions, Matrices and applications, Complex numbers.

كود المقرر : 104ر
اسم المقرر : ديناميكا
محتويات المقرر

Kinematics of a Particle Rectilinear Motion, Simple Harmonic Motion, Motion of a Variable Mass Particle, Motion in a Resisting Medium, Projectiles Motion, Principle of Virtual Work and Equilibrium Stability.

كود المقرر : 102ل
اسم المقرر : لغة انجليزية
محتويات المقرر

Part Two: Vocabulary Skills, Words in context, Roots , Words for size , Idioms, confusing Expressions and word pairs, Part Three:Writing Skills, Structure and cohesion , Description: Process and procedure , Definitions, Exemplification, Classification, Part One: Reading comprehension, Doing Science, Analogy and Memory, Energy.

مقررات الفرقة الثانية

اسم المقرر : معادلات تفاضليه
كود المقرر : 201ر

محتويات المقرر

Introduction of differential equations :• The definition of differential equations ,• Classification of differential equations, • General solution of the differential equation, • The only solution to the differential equation, First order equations:• Equations removable,• Linear Equations, Bernoulli equations: •Complete equations, • Equations not Completely and converting it to Complete, Equations of the form y '= F y / x: • Equations of the first order and the higher orders, Second order equations: • Reduce the level, • Solutions of the basic equations of homogeneous, Homogeneous equations with constant coefficients: • Euler equation, Non-homogeneous equations of second order, How to change the parameter: • Moving D, Systems of differential equations, Laplace transformations, Use Laplace transforms to solve differential equations.

كود المقرر : 202ر
اسم المقرر :مقدمه في الاحصاء
محتويات المقرر

Probability, the sample space and events, The definition of probability, harmonic analysis, Conditional probability and independence, law of total probability, The theory of Bayesian and its applications, Random variables discrete and continuous, Probability mass functions, probability density function, Distribution function and its properties and how derived from the probability distributions, and vice versa, Some probability distributions are important discrete and continuous such as the binomial distribution, Poisson distribution, geometric and hyper geometric and negative binomial, regular distribution, exponential distribution, The gamma distribution, beta distribution, normal distribution, Mathematical expectation for some distributions discrete and continuous, Moments generating function.

كود المقرر : 203ر
اسم المقرر :تحليل رياضي او حقيقي
محتويات المقرر

Some properties of real function, Convergence and divergence of Sequence of real number, Convergence and divergence of series of real number, Convergence tests.

كود المقرر : 203ر
اسم المقرر : استاتيكا
محتويات المقرر

Vector Analysis, Centroid, Moment and products of inertia , Fluid Static, Attraction and potential, Flexible chains and strings.

كود المقرر : 201ف
اسم المقرر : ديناميكا حراريه
المحتويات :

Fundamental concepts of thermodynamics such as : thermodynamic systems , thermodynamic equilibrium , equation of state, internal energy, work, heat, heat capacity and heat enthalpy and ets., First law of thermodynamics, Second law of thermodynamics, Reversible and Kelvin temperature scale , Entropy, Combined first and second laws of thermodynamics , Engines and heat pumps, Third law of thermodynamics.

كود المقرر : 202ف
اسم المقرر : دوائر كهربيه وكهرواستاتيكيه
المحتويات :
دوائر كهربيه

Inductor-Capacitance-Series-parallel combination-Natural response of RL and RC circuits. Step response of RL and RC circuits-Natural and step response of parallel and series RLC circuits, Induced emf in a rotating coil, Phase and phase difference, Average value, root mean square value,Resistance-capacitance-inductance in AC circuit, Series connections: RC-RL-RLC square value, Resistance-capacitance-inductance in AC circuit, Series connections: RC-RL,-RLC series circuits, Parallel Ac Circuits, Types of filters: Low -pass and high -pass filters- Band-pass and band-stop filters, Power and corrections of power factor, R-L-C resonance in series circuits-quality factor, AC bridges: Wheatston-Owen-Maxwell-Robison-Mutual inductance bridge-Shering bridge, Mutual inductance bridge-She Circuits. Step response of RL and RC circuits-Natural and step. Response of parallel and series RLC circuits.ring bridge, Transient current in electric circuits, Complex impedance and solutions of AC circuits

كهرواستاتيكيه

Vector algebra-Gradient-Vector differen tiation and integration-Divergence,curl ,Coulomb's law, Electric field-Electrostatic potential,Gauss's law-Electricin dipole- Multipole expansion of electri, Poisson's and Laplac eqs. and their solutions,Zonal harmonics, Electrostatic images, Gauss's law in dielectric, Electric displace ment and susceptibility, Electrostatic energy.

كود المقرر : 204ر
اسم المقرر :جبر خطي
محتويات المقرر

Introduction, Matrices, Vector Space, Linear Transformation , Inner Product, Eigen- values and Eigen vectors.

كود المقرر : 205ر
اسم المقرر : هندسه فراغيه وتحليله
محتويات المقرر

Cartesian and parametric equation of line in space, Cartesian and parametric equation of plane in space, Relation between line, planes and spheres in space, General theory of quadratic surface, Sphere, Ellipsoid , hyperboloid, parabolic, Cylindre, Tangent plane of surfaces in space, The general equation of 2_ed degree in 3 variable.

كود المقرر : 206ر
اسم المقرر :ديناميكا
محتويات المقرر

The Small Oscillation, Central Orbits, Constrained Motion, Plane Motion of a Rigid Body, Plane Motion of a Rigid Body, Motion of a Particle in Three Dimension, The Small Oscillation.

كود المقرر : 203ف
اسم المقرر : جوامد والكترونيات
المحتويات :

Introduction, The structure of Atom,Band Theory of Solids. Intrinsic Semiconductor, The Doping of Semiconductors, P- and N- Type Semiconductors .P-N Junction , Light emitting diodes, The Zener Effect, Some other diodes, Rectification Introduction and Half wave rectifier , Rectification Full wave rectifier, Filters Capacitor Filter, Transistors Construction and Operation, The Common-Emitter Circuit , The Common-Emitter Amplifier , The Common-Collector Amplifier, Transistor Bias.

كود المقرر : 204ف
اسم المقرر : فيزياء ذرية – ضوء فيزيائي
المحتويات :
الفيزياء الذريه

Cathode ray, Electromagnitic radiation, Atomic models, Atomic hydrogen spectra, Bohr theory& hydrogen atom, Summerfield theory, Fine Structure , Fine structure Spectra of hydrogen like ions, spectra of alkali atom, Schrodinger wave equation, Simple one-electron atom model, Photo elctric effect.

الضوء الفيزيائى

Simple harmonic motion, Interference, Diffraction of light, Polarization of ligh

كود المقرر : بدون
اسم المقرر : حاسب
المحتويات :

writing a program and Variables in an OOP , Flow Control and more variables , Functions and Debugging , Intro to OOP and Classes , Class members and More Classes , Events and Using Windows and Controls.

كود المقرر : 202ل
اسم المقرر : لغة انجليزية
المحتويات :

Acids. Reading, Matter and Volume. Reading , Force and Presure. Reading, Modals. Grammar, Pronoun Determiners. Grammar, Relative Clauses. Grammar, Adjectives and Adverbs. Grammar, Conjunctions and Prepositions Grammar, Writing Instructions. Writing, Describing. Writing, Listing Characteristics. Writing, Skimming. Reading, Scanning. Reading, Finding the Pattern of Organization. Reading , The Properities of Air. Reading.

محتويات الفرقة الثالثة

كود المقرر : 301 ف
اسم المقرر : الكترونيات
محتويات المقرر:

Semiconductors, Diodes, Transistors, bipolar transistor bias, load line and amplifiers, Ideal operational amplifier-Inverting amplifier, Noninverting amplifier-frequency compensation, Uni-junction transistor-UJT relaxation oscillator, Thyristor concepts, Silicon controlled rectifier.

كود المقرر : 302ف
اسم المقرر : فيزياء رياضية
محتويات المقرر:

Gamma and Beta Function, Series solution of differential equations & Forbenius method, Series solution of differential equations & Forbenius method, Legendre polynomials generating function – orthonormalization, Legendre series – Associated Legendre – Second kind Spherical harmonics, Bessel Functions. Generating function – Different representations – Hankel function, Modified Bessel – Integrals involving Bessel, Hermite Polynomials, Generating function – Different expressions – Weber, Hermite functions – Orthonormalization, Laguerre Polynomials. Generating function Alternative expressions – Associated Laguerre Polynomials.

كود المقرر : 303 ف
اسم المقرر : النظرية الكهرومغناطيسية
محتويات المقرر:

Fundamentals of electrostatics, Boundry value problems in electrostatic, Laplace anqd Poisson equations, Dielectric media.

كود المقرر : 304ف
اسم المقرر : ديناميكا حرارية واحصائية
محتويات المقرر:

Introduction to statistics, Distribution of molecular velocities, Boltzmann's statistics, Application of Boltzmann's statistics , Classical quantum statistics, Applications of classical quantum statistics.

كود المقرر : 305ف
اسم المقرر : فيزياء حديثه
محتويات المقرر:

Special Relativity, Particle Properties of Waves, Wave Properties of Particles, Atomic Structure.

كود المقرر : 306ف
اسم المقرر : جوامد
محتويات المقرر:

Metallic crystals, Ceramic crystals, Structure of organic polymers, Crystalline and noncrystalline phases, Imperfections in solids: phonons, thermal energy of solids, fluctuations in energy, Imperfections in solids: Misplaced atoms, Vacancies and intestinal, reduction of point defects, Imperfections in solids: dislocations, Diffusion: crystallographic features, diffusion in interstial alloys, diffusion by vacancy motion, long distance motion, Macroscopic diffusion, Solidification and grain size strengthening: Nucleation, growth, cooling curves, casting or ingot structure, Solidification and solid solution strengthening :phases, solutions and solubility conditions for unlimited solid solubility in metals, solid solution strengthening, isomorphism phase diagrams, relationship between strength and the phase diagram, Solidification of a solid solution alloy Nonequilibrium solidification of solid solutions, No equilibrium solidification of solid solution alloys, segregation, Castability of alloys with a freezing range, ceramic and polymer systems, Principles of dispersion strengthening, The eutectic phase diagram, hypoeutectic and hypereutectic alloys.

كود المقرر : 322ف
اسم المقرر : فيزياء تجريبية
محتويات المقرر:

Integration and differentiation circuits, wave shaping, clipping circuits, oscilloscope, common emitter characteristics, and amplifier, common base characteristics, common collector characteristics, FET characteristics, RLC Filter, Solar cells , Contact potential, Laser(Fabry Perot interferometer), Field effect transistor, Common collector amplifier, common base amplifier, Dc amplifier, Isolated gate field effect transistor, Silicon controlled rectifier, unijunction transistor, Plamck's constant.

كود المقرر : 307ف
اسم المقرر : ميكانيكا الكم
محتويات المقرر:

Origin of Quantum Mechanics , Postulates of Quantum Mechanics, Solution of Schrodinger equation, Three-dimensional problems, Angular Momentum, Approximation Methods.

كود المقرر :بدون
اسم المقرر : حاسب
محتويات المقرر:

Introduction to database, Create tables and Identify keys, relationships between tables, deleting with different, deleting with forms, deleting with reports, deleting with macros, Dealing with SQL, Apply Visual Basic modules, Explain and demonstrate Internet features of Access

كود المقرر : 308ف
اسم المقرر : فيزياء ذرية ومفاعلات
محتويات المقرر:
أولا :فيزياء ذرية

The vector atom model and quantum numbers associated with it, Magnetic moments due to orbital and spin motions, The Stern- Gerlash experiment, Spin - orbit couling and the total angular momentum, Fine structure - selection rules - Intensity rules, X- ray.

ثانياً: المفاعلات

The Neutron reactions, Binding Energy of Nuclei, Nuclear Cross sections, Energy variation of Neutron Cross section, Differential Scattering Cross-sections, Discovery of Nuclear fission, Fission products, Fission cross section, Fission chain reaction, multiplication factor, classification of nuclear reactors.

كود المقرر : 309ف
اسم المقرر : فيزياء نوويه
محتويات المقرر

Nuclear masses and nuclear stability , Nuclear spin and moments, Nuclear Models, Radioactive decay, Interaction of radiations with matter, Counters, Accelerators.

كود المقرر : 310ف
اسم المقرر : ديناميكا حرارية واحصائية
محتويات المقرر

The perfect classical gas, The perfect quantal gas, Black body radiation, Systems with variable particle numbers, Fermi-Dirac statistics and its applications, Bose-Einstien statistics and its applications.

كود المقرر : 311ف
اسم المقرر : طرق الفيزياء التجريبية

محتويات المقرر:

Estimation of errors, vacuum technology (- Introduction to vacuum technology, Review of Kinetic theory of gases - roughing pumps- rotary oil pumps- high vacuum pumps- diffusion pumps- getter and ion pumps- turbomolecular pumps – vacuum system), Thin film technology (methods of preparation of thin films - chemical and electrochemical methods- physical methods- film thickness and deposition rate measurements - mechanisms of film formation - applications of thin films), structural characterization methods of solids, optical characterization techniques of thin films, electrical measurement methods of solid materials, Ion sources technology, Application of ion beams.

كود المقرر : 312ف
اسم المقرر : فيزياء رياضية
محتويات المقرر:

Complex Numbers (Polar form – De moivre's theorem , Nth root of unity , Point Sets), Functions of Complex Variables (Variables and functions, Derivatives, Analytic functions, Branch point and Branch line, Integral functions - Cauchy inequality , Liouville theorem,Taylor series - Laurent's series - Zoro' and singularities, Cauchy Residue theorm, Definite integral, Integral Transforms (Fourier Transform, Integral Transforms (Laplace Transform. Solutions of Ordinary differential equations (ODEs) using integral transforms.

كود المقرر : 323ف
اسم المقرر : فيزياء تجريبية
محتويات المقرر

Digital circuits (AND,NAND, OR, XOR, Algebra), Operational amplifier, Inverting operational amplifier, non- Inverting operational amplifier, Active filters,555 timer, Differential amplifier, Common emitter amplifier, Phototransistor, photodiode, varactor diode, LED, Free running.

كود المقرر : بدون
اسم المقرر : تدريب صيفى
محتويات المقرر

An introduction to the theoretical background and techniques involved in the training project, Getting started with the techniques and equipments involved, Carrying out experiments and data analysis, Preparation of written report.

محتويات الفرقة الرابعة

كود المقرر : 401ف
اسم المقرر : ميكانيكا الكم
محتويات المقرر

Linear vectors spaces and linear operators, Approximate method, Motion of charged particles in central force, eigen values and eigen function, Matrix representation of quantum mechanics.

كود المقرر : 402ف
اسم المقرر : فيزياء ذرية
محتويات المقرر

Many electron atoms, Vector coupling for two electrons, Helium spectrum, The electronic structure of the elements - peridic table, Hyperfine structure, Normal Zeeman effect, Anomalous Zeeman effect and the Lande' splitting factor, Paschen-Back effect. Stark effect, Electron spin resonance.

كود المقرر : 403 ف
اسم المقرر : جوامد وأشباه موصلات
محتويات المقرر

Quantum theory of solids, Free electron theory, Band theory of solids (allowed and forbidden energy gaps, formation of energy bands, the k-space diagram for a single crystal, Properties of semiconductors, Drift current, Electron and hole effective mass, The k-space diagram of Si and GaAS, Density of state function, the Fermi-Dirac distribution and the Fermi energy, charge carriers in semiconductors and equilibrium distribution of electrons and holes, the intrinsic carrier concentration and Fermi level position, dopant atom and energy levels, the extrinsic semiconductor, Degenerate and nondegenerate semiconductors, statistics of donors and acceptors, charge neutrality, relevance of the Fermi level, Carrier transport phenomena in semiconductors, drift current density and mobility effects, electrical conductivity, carrier diffusion.

كود المقرر : 404ف
اسم المقرر : اشعة ليزر و تطبيقاتها
محتويات المقرر

Introduction to Laser , The Interaction of Electromagnetic Radiation with Matter, How the First Ruby Laser Works, The Einstein Relation, Width and Shape of Spectral lines, Broadening the of emission line, Absorption and Small Signal Gain Coefficient, Optical Feedback, Laser Modes, Population Inversion, Round trip gain with losses, Three Level Laser, Four Level Laser, Some Applications of Laser.

كود المقرر : 405ف
اسم المقرر : برمجه وفيزياء حسابية - فيزياء رياضية
محتويات المقرر
أولاً: برمجه وفيزياء حسابية

Introduction to Mathematica, Defining functions, Decision making using If and Which statements., Loops and repetitions, Linear algebra, Graphics in mathematica., Physical problems.

ثانياً :فيزياء رياضية

Integral equations, Fredholm integral equations, Volterra integral equations. Integral transforms

كود المقرر : 419ف
اسم المقرر : فيزياء تجريبية
محتويات المقرر

Determination of e/m ratio by: i- Thompson's method,ii-Magnetron method , Determination of Planck's constant by 2-methods, Determination of Rydberg constant, Determination of energy gap of a semiconductor, Efficiency of an electric lamp, Neon glow lamp, G-M characteristics, Dead time, Attenuation of gamma rays by matter, Efficiency of a detector, relative efficiency, Inverse square law.

كود المقرر : 406 ف
اسم المقرر : إليكتروديناميكا
محتويات المقرر

Review of electrostatics and vector calculus, -Maxwell equations in integral and differential forms, The solution of the wave equation in free space, The solution of the wave equation in dielectric media, Boundary value problems in dielectric media, Reflection and refraction of electromagnetic waves at the boundary between two different dielectric media, The solution of the wave equation in conducting media, Continue on the wave equation in conducting media, Applications of the electromagnetic theory, Introduction to radiating systems and simple examples, Introduction to the special theory of relativity, Relativistic mass, energy and momentum.

كود المقرر : 407ف
اسم المقرر : فيزياء البلازما
محتويات المقرر

Introducing plasma definition and its basic parameters, Single charged particle motion in uniform fields., Single charged particle motion in nonuniform fields and its applications in plasma confinement, Plasma as fluids, The set of fluid equations which describing the plasma system, Introducing plasma electrostatic waves, Electromagnetic plasma waves, Plasma instabilities.

كود المقرر : 408ف
اسم المقرر : فيزياء نووية

محتويات المقرر

Nuclear Force, Nuclear Interactions, Alpha decay, Beta decay, Gamma decay, Elementary Particles, Strong interactions, Weak interactions.

كود المقرر : 409ف
اسم المقرر : مفاعلات
محتويات المقرر

Slowing down of neutrons, The neutron transport equation, Approximate methods to solve the transport equation, The neutron diffusion equation, Solution of diffusion equation for thermal neutrons, neutron leakage Solution of diffusion equation for a plane source, Solution of diffusion equation for a point source, Solution of diffusion equation for a finite medium.

كود المقرر : 410 ف
اسم المقرر : ميكانيكا الكم
محتويات المقرر

Scattering theory, Angular momentum- Calculus operator method, The Matrix representation of angular momentum, Expectation values, Motion of the electron in H2 atoms with spin consideration, Dirac theory of the electron.

كود المقرر : 420 ف
اسم المقرر : فيزياء تجريبية
محتويات المقرر

Hydrogen atom, Bohr atomic model and Quantum tunnelling , Photoelectric effect, (Dispersion and Couchy's formula, Selmer's dispersion relation, Oscillation energy, dispersion energy), Acoustic transducers and Active filters, Thermo-ionic emission, Richardson's equation and Stefan's law, Relative permeability and Electromagnet.

كود المقرر : بدون
اسم المقرر : بحث او مقال
محتويات المقرر

Choosing the subject of the undergraduate thesis taking the interest and potential of student under consideration. This choice requires a search and general readings on the chosen subject to pick up a specific point for research, Getting started to get necessary theoretical and/or experimental appropriate for the project, Doing the calculations/the experiment and managing the results in tabulated and/or graphical format, Analyzing and discussing the results, and writing up the thesis in a format containing abstract, introduction, theoretical background, results and discussion and finally conclusions. Up to date reverences must be included.