

Physics and Chemist

الدرجات					الساعات			١٥ م ج	لغة انجليزية (1)
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	-	2		English Language (1) UR015

1- Listening & Speaking:
A- (Listening): This part of the course aims at training the students for listening and understanding audio-visual material
B- (Speaking): This part helps the students to speak simple and correct short sentences fluently.
2- Reading:
 This part aims at training students for correct reading, building up vocabulary and promoting grammatical structures.
3- Writing:
 This part helps the students to spell English words correctly and to use the punctuation marks.
4- Grammar:
 This part aims at providing the students with knowledge of the grammar of the target language, and its basic structures.
5- Translation:
 This part aims at developing the students' abilities in translating scientific texts both into and from English.

الدرجات					الساعات			٢٠ م ج	لغة انجليزية (2)
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	-	2		English Language (2) UR020

II- English Language (2): 2 hours per week in the 2nd term
Terminology:
 This course aims at introducing the students to the Morphology of the target language . The students study the structure of words. They start with understanding the meaning of a morpheme, then they learn the different types of morphemes, after that they intensively learn the use of affixes. Finally, they end with learning lists of scientific terms in the different fields of science with an increasing ability to guess the meaning of any new term, especially after studying prefixes & suffixes as mentioned above.

الدرجات					الساعات			٥٠ م ج	قضايا مجتمعية
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	0	-			Societal Issues UR050

الدرجات					الساعات			١١ م ج	ادارة اعمال
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	-	2		Management UR011

الدرجات					الساعات			١٢ م ج	تاريخ العلوم
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	-	2		History of Science UR012

The importance of studying history of science
An overview on the science of ancient scientists
Presentation of the history of most prominent theories in mathematics and physics
Presentation of the history of the most important developments of biological sciences (embryogenesis, photosynthesis, genetic engineering, reproduction).
Philosophical reflections of modern biology.

Means of honoring scientists

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	2	-	2

التغذية الصحية

م ١٣ ج

Healthy Feeding

UR013

- 1- A healthy diet and our body
- 2- Components of healthy diet: carbohydrates, lipids, proteins, minerals, vitamins, and fiber.
- 3- Healthy eating pyramid.
- 4- How to read and interoperate nutrition facts.
- 5- Feeding control and the factors that regulate the quantity of food intake especially Leptin and Ghrelin
- 6-Physiology of the Human digestive system (digestion, absorption, metabolism and elimination)
- 7- Anabolic and catabolic hormones.
- 8- Definition and calculation of basal metabolic rate (BMR).
- 9- Body mass index and body volume index.
- 10- Feeding abnormalities (Obesity and malnutrition)
- 11- Definition and types of food additives with E number.
- 12- Example for some popular diseases (bronchial asthma, hypertension, anemia, coronary artery disease, hepatitis, diabetes mellitus, Alzheimers)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	2	-	2

التفكير العلمي

م ١٤ ج

Scientific Thinking

UR014

- The nature of scientific thinking
Characteristic of scientific thinking
The importance of scientific thinking for the renaissance of societies
Obstacles of scientific thinking practices
Science and non-science
Distinguish between facts and myths
Scientists' personality
Using scientific thinking to identify and solve problems
Different scientific approaches to solving the problems

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	2	-	2

لغة عربية

م ١٦ ج

Arabic Language

UR016

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	2	2/-	2

الحاسب الالى

١٠٠ ار

Computer Sciences

MC100

- Fundamentals of programming and computer languages - Algorithm and Flowcharts - Elements of Language under case - Basic Instructions in Language under case - Control Instructions - Arrays and dimension statement - Subprograms - Some applications.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	-/2	2

رياضيات عامة (1)

١٠٠ ار

Mathematics (1)

M100

- Calculus: Functions of one variable - Limits and Continuity - Derivatives - Applications of Differentiation - Taylor and McLaurin series, Indefinite and definite integrals.
Algebra: Mathematical induction - series - Partial fractions - Matrices and systems of linear equations -

Approximate solutions of non-linear equations.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	-2	2

رياضيات عامة (2) ١٠٥

Mathematics (2) M105

Calculus: Techniques of integration - Definite integrals and their properties- improper integral - numerical integration - Applications of definite integrals.

Geometry: Coordinate systems in the plane - Straight lines and circles in general forms - Conic sections - Geometric transformations in the plane - Coordinate systems in the space - The plane and the straight lines in the space and surfaces of revolution of second order.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

فيزياء عامة (1) ١٠٠

Physics (1) P100

Physical quantities - Units and dimensional analysis - Vectors - The laws of motion in one- and two- dimensions and its applications - Newtown's second Law of motion and its applications. Work and energy - Heat and heat conduction - The kinetic theory of gases - Specific heat of gases - First law of thermodynamics. 12 Experiments related to the above topics.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

فيزياء عامة (2) ١٠٥

Physics (2) P105

The nature and propagation of light - Reflection and refraction at plane surface - Lenses & Mirrors, Eye's structure and camera - Microscopes and Telescopes - Coulomb law and electrostatic fields - Electrostatic potential- Capacitance and dielectrics- Electric current, DC circuits and Krichhoff's Rules-Magnetic field and magnetic force - Electromagnetic induction.

12 Experiments related to the above topics.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

كيمياء عامة (1) ١٠٠

Chemistry (1) C100

(A):Atomic Spectra – Electron Orbital and Quantum Numbers – Quantum Energy Levels in Atoms – Basic Concepts of Bonding Electronegativities – Lewis Structure – The Octat Rule – Dipolemoment – Resonance Hybridization in Molecules – Geometrics of Molecules – Orbital Configuration for Diatomic Molecules.

(B):State of Matter – Introduction in Surface and Colloids Chemistry – Electrolytic Cell – Electrochemical Cells – Potential of Electrode (Selected practical experimentals)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

كيمياء عامة (2) ١٠٥

Chemistry (2) C105

(A): Chemical Equilibrium – Ionic Equilibrium – Basic of Qualitative Analysis – Solution Chemistry.

(B):Introduction on Organic Chemistry-Bonding in Organic compounds – Hybridization in Carbon Compounds – Physical Properties of Org. Compounds – Nomenclature, Synthesis and Chemical Reactions of alkanes, alkenes and alkynes

(Practical: Selected practical experiments)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

اساسيات الجيولوجيا ١٠٠

Principles of Geology G100

Physics and Chemist

Origin of Planet Earth: Constituents of the Earth's crust (crystals, minerals, rocks) – Classification of rocks
Internal Processes: Dynamics, structures and plate tectonics – Development of structural traps and ore deposits
External Processes: Weathering – Erosion – Wind action – Geological work of waters (surface, groundwater, seas and oceans) – Formation of hydrocarbons and sedimentary ores – Development of stratigraphic traps
Time scale: Geologic timescale and fossil records

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

حيوان عام	ح ١٠٠
General Zoology	Z100

Protoplasm - Organization and function of animal cell - Study of the animal tissues - Life functions - Introduction to early development of animals - Characters and classification of the major animal phyla

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

نبات عام	ان ١٠٠
General Botany	B100

Cell structure – plant tissues – Anatomy of primary plant organs – Classification of plant kingdom – General aspects of virus, bacteria, algae and fungi – Flower structure, inflorescences and fruits – Selected families of flowering plants

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	2	-	2

اخلاقيات وأداب المهنة والسلامة المهنية	F٣٠٠
Scientific Ethics&Safety	F300

Definition of Ethics and Professional Ethics- Sources of the ethical principles- Benefits- Common mistakes about the professional ethics- Ethics of university teaching , research and authoring and supervising - Citation and Plagiarism-Intellectual property Ethics teacher pre-university- Ethics and the ethics of practicing the profession of medical laboratory- Biological ethics - Ethics of Computer and multimedia- Ethics in works in general- Professional Reports-Role models– Ethics and behavior- Vocational training- Training on the preparation and issuance of the Code of ethics in the work - Code of Ethics for certain related professions. Occupational Safety: Public safety conditions - signs extension - scientific laboratory safety –Securing facilities from fire hazards– First aid - safety in industrial buildings - a list of conditions of safety and prevention-Crisis and emergency management.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	-/2	2

تفاضل وتكامل متقدم	ر٢١١
Advanced Calculus	M211

Functions of several variables - Partial Derivatives and their applications - Multiple integrals (double – triple) and their applications - Line and Surface integrals - Using Mathematica, and Matlab programs for graphing some Surfaces and calculate some integrals.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	-/2	2

معادلات تفاضلية (1)	ر٢١٢
Differential Equations (1)	M212

Formation of ordinary Differential Equations (ODE's) - ODE's of first Order and first Degree – ODE's of first Order and higher Degrees - Applications – Linear ODE's of higher Orders with constant Coefficients and its applications - Linear ODE's of higher Orders with Variable Coefficients - Simultaneous Linear ODE's.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

احصاء حيوى	ر٢٤١
Biostatistics	MS241

Physics and Chemist

Some basic probability concepts – Some important sampling distributions – Estimation Hypothesis testing – Analysis of variance - Regression and correlation – Multiple regression and correlation – Goodness of fit test.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	2/-	2

البرمجة الشبيهة	٢٥١رك
Object-oriented Programming	MC251

Objects and classes - Understanding class definitions - Object interaction - Grouping objects - More sophisticated behaviour - libraries - Well-behaved objects - testing, maintaining, debugging - Designing classes.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء الاهتزازات والموجات	٢١٢ف
Vibrations and Waves	P212

The simple harmonic motion in mechanical and electrical systems - The damped oscillation in mechanical and electrical systems - The forced damped oscillation in mechanical and electrical systems - Summation of the simple harmonic motions in two dimensions - Types of the waves, reflection and transmission of the waves - The ultra-sonic waves - Doppler's effect.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء حديثة	٢١٥ف
Modern Physics	P215

Principles modern physics - Black-body radiation - Planck's law of radiation, photo-electric effect - The Hydrogen atom, Rutherford model of the atom - Bohr's theory, Sommerfeld's theory - Compton effect - Dual nature of matter, De Broglie waves, the uncertainty principle Special theory of relativity: Galilean and Lorentz transformations, Michelson-Morley experiment, The two postulates of special theory of relativity. Doppler effect.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء الفلزات والسبائك والسيراميكات	٢٥٦ف
Physics of Metals, Alloys and Ceramics	P256

Types of materials, Phase diagrams - Physics of metals and alloys
Crystal structure of metals- Melting of metals, grain size- Re-crystallization and grain growth - Solid solutions - Alloys phase diagrams. Examination by electron microscopy- Processing of ceramic materials - Composite materials - Metal matrix and ceramic matrix composites - Polymeric materials processing - Deformation and strengthening of polymers.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

كهربية ومغناطيسية وتيار متردد	٢٦١ف
Electricity and AC Current	P261

RL and RC circuits, stored energy - RLC circuit under its different conditions. Alternating current: RL and RC circuit analyses - Analyses of AC circuits in terms of complex numbers - AC transient current for RL, RC and RLC circuits. Magnetic quantities – Electromagnetism – Para-and diamagnetism - Ferromagnetism – Sources of magnetic field-Ampere's Law and magnetic flux- Faraday's and Lenz Laws and motional emf. Electromagnetic waves and Maxwell equations.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل كهربية ومغناطيسية وتيار متردد	٢٦٥ف
Electricity and AC Laboratory	P265

12 Experiments in related topics

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

بصريات فيزيائية واليااف بصرية ٢٧١ ف

Physical Optics and Optical Fibers P271

Waves motion and superposition - Interference of light waves - Interference pattern from double slits (Young's experiment) - Interference of light in thin films - Diffraction of light waves - Single slits diffraction - The diffraction grating, resolving power of the diffraction grating - X-rays diffraction by crystals - Polarization of light waves- Introduction to laser physics - Optical fibers and its applications in medicine and communications.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	4	3/-	3

كيمياء عضوية(1) ٢١٠ ك

Organic Chemistry(1) C210

Organic Reactions Mechanisms – Chemistry of Carbonyl Compounds
Practical : (Selected practical experiments)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	4	3/-	3

كيمياء عضوية (2) ٢١٢ ك

Organic Chemistry(2) C212

Aromatic Compounds – Heterocyclic Compounds
(Practical : Selected practical experiments)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

الكيمياء العضوية البيئية الخضراء ٢١٤ ك

Environmental and Green Chemistry C214

Agrochemistry – Environmental Organic Chemistry – Green Chemistry

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	2	0	2

كيمياء غير عضوية (1) ٢٢٠ ك

Inorganic chemistry (1) C220

Chemistry of the main groups (S, P- block elements): General properties of the main group elements of the first group to the seven group element- use of main group elements in industry. (in a glasses, conductors, and semiconductors – fertilizers

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

كيمياء فيزيائية(1) ٢٣٠ ك

Physical Chemistry (1) C230

Chemical thermodynamics: Thermodynamics concepts- First law of thermodynamics- second law- Entropy changes of enthalpy and entropy with temperature-Gibb's free energy function and chemical potentials.
Chemical kinetics: Concept and terminologies of chemical kinetics- Reaction rate laws- Effect of temperature on reaction rates- Theory of reaction rates

Physics and Chemistry

الدرجات					الساعات			كيمياء فيزيائية (2)	٢٣٢ ك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Physical Chemistry (2)	C232

Phase rule: Concept and terminologies of phase rule, phase rule equation, One , Two, Three component systems and their applications. Colloids: Preparation, properties- The stability of hydrophilic and hydrophobic sols. gels- Emulsions and Foams. Electrochemistry(I): Ionic conductivity and applications- Electrochemical cells and electrode potentials- The Nernst equation- Primary and secondary cells- Fuel cells.

الدرجات					الساعات			مقدمة فى التحليل الكيمياءى الكمى	٢٤٠ ك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Introductory Quantitative Analysis	C240

Statistical treatment of Analytical Data, Activity and Systematic Treatment of Equilibrium, Acid-Base equilibrium, Types of titration in volumetric analysis, Gravimetric analysis, Fundamentals of potentiometry & Principles of UV, Vis-Spectrophotometry
(Practical: Selected practical experiments)

الدرجات					الساعات			بلورات ومعادن	٢٣١ ج
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Mineral and Crystals	G231

Crystallography: Introduction - Elements of symmetry - Crystal forms - Crystal systems and classes – Physical properties.
Minerals: Atomic structures - Nature and origin of the minerals -Isomorphism and polymorphism - Continuous and discontinuous reaction series - Silicate and non-silicate minerals.

الدرجات					الساعات			ميكروبيولوجيا عامة	٢٩١ ن
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	General Microbiology	B291

Taxonomy of Prokaryotes – benefit and harmful effect of bacteria – bacterial cell structure – growth of bacteria – general characters of fungi – Fungal classifications – Myxomycota, Mastigomycota and Zygomycota

الدرجات					الساعات			تحليل عددى (1)	٣٢٣ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Numerical Analysis (1)	M323

Errors in Numerical computation - Solutions of Non-linear Equations - Direct and Iterative Methods for Solving Linear Systems - Interpolation and Polynomial approximations - Numerical differentiation - Numerical Integration.

الدرجات					الساعات			حزم البرامج الرياضية والاحصائية	٣٠٠ رك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Mathematical and Statistical Packages	MC300

Using the mathematical and statistical packages (Matlab, Mathematica, Min Tab, SPSS, ...etc) for matrices – Functions – Graphics – Data Fitting – Applied Statistics

الدرجات					الساعات			ميكانيكا الكم (1)	٣١١ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Quantum Mechanics (1)	P311

Physics and Chemist

Equation of motion, conservation laws - Integration of motion equations - Failure of classical mechanics - Origin of the quantum theory, Hydrogen atom - Wave particle dualism, Postulates.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل الفيزياء الحديثة (1) ف ٣١٥

Modern Physics Laboratory P315

12 Experiments in related topics

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

الفيزياء النووية (1) ف ٣٤٢

Nuclear Physics (1) P342

Rutherford theory of alpha scattering- The classical properties of the nucleus - The constituents of the nucleus, Quark theory - The nuclear binding energy - Nuclear fission and fusion reactions - The natural radioactivity.

Electric and magnetic properties of the nucleus - Vector coupling, Parity - The nuclear forces, Schrodinger`s wave equation of deuteron - Mechanisms of alpha, beta and gamma decay - Neutron reactions and detection - Principles of reactors and accelerators.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل الفيزياء النووية ف ٣٤٥

Nuclear Physics Laboratory (1) P345

12 Experiments in related topics

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء الجوامد (1) ف ٣٥٣

Condensed Matter Physics P353

Crystal structure - Reciprocal lattice, X-ray diffraction in crystals - Lattice vibrations and thermal properties - Defects in crystals (point defects and 1-d, 2-d and 3-dimensional defects) - Free electron mode and electric properties - Band theory and Brillion zones - Theory of dielectrics, Ferroelectric crystals - Optical properties - Magnetic properties and applications of ferromagnetic materials.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل فيزياء الجوامد (1) ف ٣٥٥

Condensed Matter Physics Laboratory (1) P355

12 Experiments in related topics

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

الالكترونيات (1) ف ٣٦١

Electronics (1) P361

Semiconductor diodes and applications- Bipolar junction transistors - Field-effect transistors - Biasing of transistors, integrated circuits - Operational amplifiers - Feedback amplifiers and oscillators.

Physics and Chemistry

الدرجات					الساعات			معمل الكترولنيات	ف ٣٦٥
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	20	20	50	0	1	3/-	0	Electronics laboratory (1)	P365

12 Experiments in related topics

الدرجات					الساعات			فيزياء بيئية	ف ٣٨٣
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Environmental Physics	P383

Origin and composition of the atmosphere - Charged particles, temperature distribution in the atmosphere - Atmospheric thermodynamics - Radiation transfer and spectrum, absorption and emission - Atmospheric absorption of solar radiation.

الدرجات					الساعات			الكيمياء الضوئية والوسائط النشطة	ك ٣١٣
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Photochemistry & Regative Intermediates	C313

Photochemistry – Reactive Intermediates

الدرجات					الساعات			معمل كيمياء غير عضوية (1)	ك ٣٢٠
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	20	20	50	0	1	3/-	1	Inorganic Chemistry Laboratory (1)	C320

Preparation of simple and double salts – preparation of metal complexes – characterization by spectrophotometric and conductometric methods.

الدرجات					الساعات			كيمياء غير عضوية (2)	ك ٣٢١
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Inorganic Chemistry (2)	C321

Transition elements: An introduction to transition elements – general properties of the first transition series and their compounds.

Coordination compounds: Coordination compounds and double salts – application of coordination compounds – nomenclature – preparation – isomerism – stability – oxidation states – nature of bonding- Huggin's suggestion – investigation of structures. Coordination polymer.

الدرجات					الساعات			كيمياء غير عضوية (3)	ك ٣٢٤
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Inorganic Chemistry(3)	C324

Inner transition elements: Relation between lanthanides and actinides - f-block elements and d-block elements – chemistry of some important elements – method of separation – properties of the compounds – oxidation state – Spectral and magnetic properties

Coordination chemistry: Crystal field theory complexes of weak and strong field ligands – ligand field and molecular orbital theories – stability constant of complexes – Jochen Toiller effects.

الدرجات					الساعات			معمل الكيمياء الفيزيائية (1)	ك ٣٣١
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	20	20	50	0	1	3/-	0	Physical Chemistry Laboratory (1)	C331

Experiments based on: Chemical kinetics, Phase rule, and electrochemistry.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

كيمياء فيزيائية (3) ك 332

Physical Chemistry (3) C 332

Quantum chemistry: Pre-Schrödinger equation- Schrödinger equation and its application to translational, vibrational, and rotational motion of a particle.
Theory of gases: The kinetic molecular gas model- numerical values of molecular velocities and their distribution in three dimensions – Average quantities from the distribution law – equipartition principle - the molecular gas collisions and the mean free path, Transport properties.
Molecular spectroscopy: Types and patterns of free energies of gas molecules- experimental and theoretical treatment for studies on rotational vibrational, Raman and electronic spectra- spectral analysis using NMR and ESR.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	2/-	2

بيولوجيا جزيئية وخلية ح 318

Cell and Molecular Biology Z 318

The cell theory. Membranous organelles. Non-membranous organelles. The cell inclusions. The nucleus. Cell division. DNA & RNA synthesis and structure. DNA structure- Genome organization in prokaryotic and eukaryotic cell- DNA replication and repair - Translation - Gene expression in eukaryotes Recombinant DNA techniques.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	0	0	0	90	2	0	2

مقال او بحث 400 ف

Research project or Article P400

Research Project/Article

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء الحرارة المنخفضة والموصلية الفائقة 422 ف

Low temperature physics and superconductivity P422

Production and measurements of low temperatures - Electrical and mechanical properties at low temperatures- Magnetism and specific heat at low temperatures - Superconductors, Normal transition - The energy gap and zero resistance – The BCS Theory – Josephson junction - Introduction to high temperature superconductors - Applications of superconductors.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء اشعاعية وتلوث اشعاعي ووقاية من الاشعاع 444 ف

Radiation physics , Radiation pollution and safety P444

Radiation sources - Interaction of radiation with matter - Radiation detection and detectors - Biological effects of ionizing radiations - Dose meters and survey meters - External and internal hazards of radiation - Storage of radioactive materials.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء اشباه الموصلات والاعشبية الرقيقة وتطبيقاتها 451 ف

Physics of semiconductors and thin solid and its applications P451

Crystal structure, energy bands - Intrinsic and extrinsic semiconductors, Fermi-Dirac function - Density of carriers, carrier transport, Hall effect - p-n junctions, I-V and C-V characteristics - Characteristics of

Physics and Chemist

transistors (BJT, MIS) - Optoelectronic : photodiodes, laser diodes, solar cells.
Introduction, Vacuum techniques, Vacuum gauges - Different methods of thin films preparation - Thickness measurements - Characterization of thin films - Thin films applications.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

الرنين المغناطيسي واطيف موسباور

٤٥٣ ف

Electron spin resonance Mossbauer spectroscopy P453

Paramagnetic resonance - Line width, effect of damping - Fine and hyperfine structure - Electron paramagnetic resonance - Ferromagnetic and anti-ferromagnetic resonance - Nuclear magnetic resonance - Magnetic resonance imaging.
Resonance absorption of gamma rays and the Mossbauer effect - Lattice dynamics and phonons - Hyperfine interactions: electric monopole, electric quadrapole interactions and the magnetic dipole interactions - Analysis of Mossbauer spectra, Mossbauer parameters.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل فيزياء اشباه الموصلات

٤٥٥ ف

Physics of semiconductors laboratory P455

12 Experiments in related topics

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

علوم المواد النانوية وتطبيقاتها

٤٥٨ ف

Nanomaterial science and its applications P458

Fabrication methods - Factors affect the particle shape - Characterization techniques - Electrical, magnetic and optical properties - Nanotechnology for Bio-materials and tissues - Nanoparticulates applications.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

فيزياء الليزر وتطبيقاته

٤٧٢ ف

Laser physics and its applications P472

Introduction to laser physics and its characteristics - Theory of laser - Types of lasers - Applications of Lasers in different fields.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

موضوعات مختارة في الفيزياء (1)

٤٩١ ف

Special topics in physics (1) P491

The title and topics are to be determined by the Physics Department

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	0	0	0	90	2	0	2

مقال او بحث

٤٠٠ ك

Research projector article C400

An essay or research article in one of the different fields of chemistry

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

كيمياء الجزيئات الحيوية

٤١٣ ك

Chemistry of biomolecular C413

Physics and Chemist

Biochemistry (II): Lipids – Nucleic acids – Enzymes.

Medicinal Chemistry

(Practical: Microanalysis, Detection and estimation of Carbohydrates, Amino acids, Proteins, Lipids, Nucleic acids Ect.)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	20	20	50	0	1	3/-	0

معمل كيمياء عضويه متقدمه ك ٤١٥

Advanced organic chemistry
laboratory C415

Advanced organic synthesis – Estimation of functional group.

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	30	0	50	3	0	3

موضوعات مختارة فى الكيمياء التحليلية ك ٤٤٤

Special topics in Analytical
Chemistry C444

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

طرق التحليل الآلي ك ٤٤٥

Instrumental Method of Analysis C445

Introduction To Atomic Spectrometry (Absorption, Florescence and Emission Spectrometry.

Ultraviolet/Visible Spectrophotometry and Infrared Spectrometry, Polarography & Amperometry, Conductometry & Coulometer and Modern Voltammetric Techniques, Analytical Separation.)

(Practical: Selected practical experiments)

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	3/-	2

كيمياء البترول والبتروكيماويات ك ٤٥١

Petroleum Chemistry and
Petrochemicals C 451

Crude Oils – Evaluation of Crude Oils - Refining of Petroleum – Petrochemicals Derived from Petroleum Fractions

(Practical: Selected practical experiments)