

thematics and Phvs

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

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

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

قضايا مجتمعية	م ٥٠ ج
Societal Issues	UR050

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

ادارة اعمال	م ١١ ج
Management	UR011

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

تاريخ العلوم	م.١٢ ج
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

١٣ م ج التغذية الصحية

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

١٤ م ج التفكير العلمي

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

١٦ م ج لغة عربية

Arabic Language UR016

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

١٠٠ ارك الحاسب الالى

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

١٠٠ ا ر رياضيات عامة (1)

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.

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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.

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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.

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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.

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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)

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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)

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اساسيات الجيولوجيا ١٠٠

Principles of Geology G100

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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

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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

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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

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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.

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تفاضل وتكامل متقدم	ر ٢١١
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.

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معادلات تفاضلية (1)	ر ٢١٢
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.

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جبر خطي وهندسة فراغية	ر ٢٢١
Linear Algebra and Geometry	M221

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Vector spaces – Linear transformations – Properties of linear transformations (range and kernel) - Algebra of linear transformations- Eigenvalues and Eigenvectors -Inner product spaces- Self adjoint transformations
Bilinear and quadratic forms. Reduction of quadratic forms in R^n – Applications in Geometry.

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رياضيات متقطعة	ر ٢٢٣
Discrete Mathematics	M223

Sets – Relations – Equivalence relations – Mappings – Binary operations - Counting – Rules of inference – Graph theory – Graphs and multigraphs – Planar graphs – Colorations, Trees – Boolean Algebra – Duality – Basic theorems – logic Gates and Circuits.

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الميكانيكا النيوتونية	ر ٢٣١
Newtonian Mechanics	M231

Statics in plane - Applications on equilibrium of two-dimensional force systems - Statics in space – Friction - Center of gravity and centroid - Virtual work - Kinematics of a particle in a straight line - Kinematics of a particle in a plane - Relative motion in a plane - Kinetics of a particle - Simple harmonic motion - Central orbits – Dynamics of a rigid body in a plane.

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الميكانيكا التحليلية	ر ٢٣٢
Analytical Mechanics	M232

Dynamics of a particles in three dimensions - Rotating axes – Components of velocity and acceleration in different coordinate systems – Faucolt's pendulum – Dynamics of rigid body in three dimensions - Eulerian angles – Moment of inertia – Equations of motion – Euler's equations - Impulsive motion - Motion of a system of particles - Constraints - Generalized Coordinates - Lagrang's equations – Hamilton's canonical equations - Ignorable or cyclic coordinates - Routh's equations - Phase space-Liouville's theorem – Hamilton's principle of least action - Canonical or contact transformation - Invariants – Hamilton-Jacobi equation.

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10	10	30	0	50	3	-/2	2

احتمالات (1)	ر ٢٤٢
Probability (1)	MS242

Sample Space - Random Variables - Some Discrete Distributions - Some Continuous Distributions - Bivariate and Multivariate Random Variables - Some special bivariate Distributions.

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

البرمجة الشيئية	ر ٢٥١
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	10	20	50	3	2/-	2

هياكل بيانات	ر ٢٥٢
Data Structure	MC252

Data representation – arrays and matrices – lists stacks and queues – hashing – binary trees, balanced and B-trees – splay trees and tree traversals using stacks – expression trees – expressions and conversions – graphs – graph algorithms – minimum-cost spanning trees – inheritance – exceptions, interface and design by contract – basic design patterns and reuse.

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

فيزياء الاهتزازات والموجات ف ٢١٢

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 ف ٢١٥

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

ديناميكا حرارية ف ٢٢٣

Thermodynamics P223

Thermodynamics basic definitions -Adiabatic and isothermal process - Heat engine and Carnot's cycle - The 2nd law of thermodynamics - The entropy and thermodynamic potential - Important thermodynamic relations - Applications on Maxwell's equations - The 3rd law of thermodynamics - The principles of gas liquefaction.

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

كهربية ومغناطيسية وتيار متردد ف ٢٦١

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 ف ٢٦٥

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 ف ٢٧١

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.

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الدرجات					الساعات			معمل ديناميكا حرارية وبصريات فيزيائية	٢٧٥ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	20	20	50	0	1	3/-	0	Thermodynamics and Physical Optics lab Laboratory	P275

12 Experiments in related topics

الدرجات					الساعات			تحليل حقيقي (1)	٣١٢ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Real Analysis (1)	M312

Real number systems - Real sequences - Continuous functions - Differentiation - Riemann integral- Sequence of functions- Measure on the real numbers.

الدرجات					الساعات			معادلات تفاضلية جزئية ودوال خاصة	٣١٨ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Partial Differential and Special Functions	M318

Partial differential equations – Partial differential equations of first order – Linear partial differential equations of second and higher orders with constant coefficients – Gamma and Beta functions – solution in infinite series of linear differential equations (Frobenius method) – Hypergeometric functions (Gauss functions) – Bessel, Hermite, and Laguerre functions.

الدرجات					الساعات			تحليل عددي (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			بحوث العمليات (1)	٣٢٦ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Operation Research (1)	M326

Standard form of the Linear Programming Problems (LPPs) – Methods for solving LPPs - Sensitivity analysis - Network flow problems – Integer programming – Shortest path problems.

الدرجات					الساعات			الاسس الرياضية لميكانيكا الكم والميكانيكا الاحصائية (1)	٣٣١ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	-2	2	Mathematical Foundations of Quantum Theory & Statistical	M331

Comparison between classical mechanics and optics – Old quantum theory – Particle wave duality – Schrodinger wave equation – Wave function – Uncertainty principle – Solution of Schrodinger equation in one and three dimensions – Thermodynamics – Condition for statistical equilibrium – Micro canonical distribution – Canonical distribution – Ideal gas – Maxwell–Boltzmann distribution of velocities – Applications.

الدرجات					الساعات			موضوعات مختارة في الرياضيات التطبيقية (1)	٣٣٥ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Special Topics in Applied Mathematics	M335

Elected by Math. Dept. to meet new directions in Applied Mathematics

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الدرجات						الساعات			رقم	حزم البرامج الرياضية والاحصائية
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			رقم	نظم تشغيل
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	10	20	50	3	2/-	2		Operating systems	
									MC351	

Introduction to function, design, and implementation of operating system – co-ordination and synchronization processes – scheduling and dispatch – physical and virtual memory organization – paging and segmentation – device management – file systems – security and protection – communications and networking – distributed systems.

الدرجات						الساعات			رقم	خوارزميات
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	30	0	50	3	0	3		Algorithms	
									MC353	

Divide and conquer algorithms – recurrences – greedy algorithms – dynamic programming – graph search – NP-completeness and its implications – randomized algorithms – amortized analysis – lower bounds approximation algorithms – on-line algorithms – applications

الدرجات						الساعات			رقم	شبكات الحاسب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	10	20	50	3	2/-	2		Computer Networks	
									MC354	

Network architectures and protocols, placing emphasis on protocols used in the Internet. Specific topics include application layer protocols, network programming, transport protocols, routing, multicast; data link layer issues, multimedia networking, network security, and network management. Simulation of the network/transport layer functions, routing, congestion control, an Ethernet controller, and applications using TCP/IP or remote procedure calls. Intended audience: computer science and computer engineering majors.

الدرجات						الساعات			رقم	قواعد البيانات
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	10	20	50	3	2/-	2		Databases	
									MC357	

Introduction to database system – operational data – data independence – relational system – the architecture of a database system – relational algebra and calculus –recovery and concurrence security and integrity, database product family.

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

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			رقم	فيزياء البلازما وتطبيقاتها
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	30	0	50	3	0			Plasma Physics and its Applications	
									P332	

thematics and Phys

Motion of charged particles in electric and magnetic fields - Characteristic of Plasma, Aurora zone and Van Allen belt- Plasma interaction with magnetic field - Plasma electron oscillation and ion oscillation - Hydromagnetic waves, Alfven waves - Plasma diagnostic techniques - Plasma applications, Nuclear fusion.

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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.

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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.

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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.

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

معمل الكترونيات ف ٣٦٥

Electronics laboratory (1) P365

12 Experiments in related topics

thematics and Phvs

الدرجات					الساعات			فيزياء فلكية	٣٨١ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Astrophysics	P381

Historical introduction, special astronomy - Solar and lunar eclipses - Solar system, Active sun - Stars, structure, evolution, formation, properties - Interstellar matter, star clusters, galaxies, cosmology.

الدرجات					الساعات			مقال وبحث	٤٠٠ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	0	0	0	90	2	0	2	Research projector Article	M400

الدرجات					الساعات			تحليل دالي	٤١١ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Functional Analysis	M411

Metric spaces - Banach Fixed Point Theorem - Normed and Banach spaces - Inner product and Hilbert spaces.

الدرجات					الساعات			تحليل مركب	٤١٢ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Complex Variables	M412

Complex Numbers - Elementry functions - Limits and continuity - Complex Sequences - Complex Series - The Derivatives - Complex Integration - Contour integrals, and different types - Complex functions transformation - linear and bilinear transformation - Applications.

الدرجات					الساعات			هيدروديناميكا و مرونة (1)	٤٣١ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	-2	2	Hydrodynamic & Elasticity(1)	M431

Analysis of Stress - Analysis of Strain - Generalized Hooke's Law - Applications - Motion of compressible fluid turbulence motion - equation turbulence motion Deduced energy equation - mass transform through porous and non porous medio - Applications.

الدرجات					الساعات			احصاء رياضي	٤٤٢ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	Mathematical Statistics	MS442

Distribution of Functions of Random Variables - Sampling distributions - Point Estimation - Interval Estimation - Hypothesis Testing.

الدرجات					الساعات			حسابات موزعه	٤٥٢ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Distributed Computing	MC452

Introduction - Parallel and Distributed Architectures - Parallel Algorithm Design - Message-Passing Programming - Shared-Memory Programming - Performance Analysis - Applications

thematics and Phvs

الدرجات					الساعات			نظرية الحسابات	٤٥٧ ك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Theory of Computation	MC457

Models of computers including finite automata and Turing machines. Basics of formal languages with applications to the syntax of programming languages. Alternate characterizations of language classes. Proving unrecognizability. Unsolvability problems and their relevance to the semantics of programming.

الدرجات					الساعات			مقال او بحث	٤٠٠ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	0	0	0	90	2	0	2	Research project or Article	P400

Research Project/Article

الدرجات					الساعات			فيزياء الحرارة المنخفضة والموصلية الفائقة	٤٢٢ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	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			فيزياء اشباه الموصلات والاعشبية الرقيقة وتطبيقاتها	٤٥١ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	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 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			معمل فيزياء اشباه الموصلات	٤٥٥ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	20	20	50	0	1	3/-	0	Physics of semiconductors laboratory	P455

12 Experiments in related topics

الدرجات					الساعات			فيزياء الليزر وتطبيقاته	٤٧٢ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	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			موضوعات مختارة في الفيزياء (1)	٤٩١ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	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	10	30	0	50	3	0	

موضوعات مختارة في الفيزياء (2)	٩٢ ف٤
Special topics in physics (2)	P492

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