محتــويات مقـــــررات برنامج
Courses' Content
علوم الحاسب
Computer Sciences

كلية العلوم جامعة أسيوط

كلــية العـــلوم

	الدرجات				الساعات				ج ٠١٥م	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
udio-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				ج ٠٢٠م	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 traget 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, escially after studying prefixes & suffixes as mentioned above.

	الدرجات				الساعات				ج ٠٥٠م	قضايا مجتمعية
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L			
10	10	30	0	50	0	-			Societal Issnes	UR050

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

	الدرجات				الساعات				ج ٠١٢م.	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.

وكيل الكلية لشئون التعليم والطلاب

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كلــية العــلوم

Means of honoring scientists

١٣ م ج	التغذية الصحية	
UR013	**Healthy Feeding**	

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

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

٠١٤م ج	التفكير العلمى	
UR014	**Scientific Thinking**	

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

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

١٦ م. ج	لغة عربية	
UR016	**Arabic Language**	

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

١٠٠رك	الحاسب الالى	
MC100	**Computer Sciences**	

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

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.

١٠٠ر	رياضيات عامة (1)	
M100	**Mathematics (1)**	

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

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

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Approximate solutions of non-linear equations.

	رياضيات عامة (2)	١٠٥ر
	Mathematics (2)	**M105**

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

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.

	فيزياء عامة (1)	١٠٠ ف
	Physics (1)	**P100**

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

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.

	فيزياء عامة (2)	١٠٥ف
	Physics (2)	**P105**

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

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.

	كيمياء عامة (1)	١٠٠ك
	Chemistry (1)	**C100**

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

(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)

	كيمياء عامة (2)	١٠٥ك
	Chemistry (2)	**C105**

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

(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)

	اساسيات الجيولوجيا	١٠٠ج
	Principles of Geology	**G100**

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

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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

	حيوان عام	١٠٠ح
	General Zoology	**Z100**

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

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

	نبات عام	١٠٠ن
	General Botany	**B100**

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

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

	اخلاقيات وآداب المهنه والسلامة المهنية	F٣٠٠
	Scientific Ethics&Safety	**F300**

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

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.

	تفاضل وتكامل متقدم	٢١١ر
	Advanced Calculus	**M211**

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

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.

	معادلات تفاضلية (1)	٢١٢ر
	Differential Equations (1)	**M212**

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

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.

	جبر خطى وهندسة فراغية	٢٢١ ر
	Linear Algebra and Geometry	**M221**

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

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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 Rn – Applications in Geometry.

	رياضيات متقطعة	٢٢٣ ر

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

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.

	الميكانيكا النيوتونية	٢٣١ر

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

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.

	الميكانيكا التحليلية	٢٣٢ر

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

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.

	احتمالات (1)	٢٤٢رأ

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

Probability (1)	MS242

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

	البرمجة الشيئية	٢٥١رك

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

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.

	هياكل بيانات	٢٥٢رك

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

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			٢٢٥ف	مبادئ الفيزياء الحديثة
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L	**Principles of Modern Physics**	**P225**
10	10	10	20	50		3	2/-	2		

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. Introduction to the special theory of relativity.

	الدرجات					الساعات			٢٢٦ف	كهرباء و تيار متردد
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L	**Electricity and AC Current**	**P226**
10	10	10	20	50		3	3/-	2		

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.

	الدرجات					الساعات			**Systems and creative thinking**	٢٠١ت ج
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L	**Systems and creative thinking**	**Comm 201**
10	10	30	0	50		2	0	2		

Introduction, Internal systems, Memory, Frontiers of creativity, Barriers to creativity, Barriers to innovation.

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

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

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

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

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

	الدرجات					الساعات			٣٥١ رك	نظم تشغيل
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L	**Operating systems**	**MC351**
10	10	10	20	50		3	2/-	2		

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.

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	الدرجات					الساعات			٣٥٢رك	الذكاء الاصطناعى
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC352	Artificial Intelligence

Goals and methods of artificial intelligence. Methods of general problem solving. Introduction to mathematical logic. Mechanical theorem proving. Game playing. Natural language processing.

	الدرجات					الساعات			٣٥٣ رك	خوارزميات
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	30	0	50		3	0	3	MC353	Algorithms

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			٣٥٤رك	شبكات الحاسب
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC354	Computer Networks

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			٣٥٥رك	موضوعات مختارة فى علوم الحاسب
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC355	Special Topics in Computer Science (1)

Elected by Math. Dept. to meet new directions in Computer Science.

	الدرجات					الساعات			٣٥٦رك	مقدمة فى الحسابات
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC356	Introduction to Scientific Computations

Practical introduction to computational problem solving. Floating point arithmetic, conditioning and stability of algorithms – Mathematical software packages, MATLAB, Maple (etc) – Spreadsheets programs – Traditional programming languages; C and FORTRAN – Nontraditional programming environments – applications.

	الدرجات					الساعات			٣٥٧ رك	قواعد البيانات
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC357	Databases

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			٣٦١رك	الدوائر المنطقية
oral	ACT	Mid_T	Prac	Wr.		CH	P/T	L		
10	10	10	20	50		3	2/-	2	MC361	Logic Circuits

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Basic logic concepts – combinational logic – multiplexers and de-multiplexers, encoders, decoders, adders and subtractors – look-ahead carry – comparators – programmable logic arrays and memories – design with MSI, logic families, tri-state devices, CMOS and TTL logic interfacing – Sequential logic – analog and digital conversion – data acquisition – microprocessors.

محاكاة الانظمة	رك٣٦٢
Systems Simulation	**MC362**

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

Animation hardware and software – parametric blending techniques – modeling physical and articulated objects – forward and inverse kinematics – key-frame, procedural, and behavioral animation – free-form deformation.

تقييم أداء الانظمة	رك٣٦٣
System Evaluation	**MC363**

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

Basic techniques of system performance evaluation. Specific topics include: performance modeling, discrete event simulation, verification and validation of simulation models, analysis of simulation output, analysis of single server queue and queuing networks, modeling of computer systems, networks, and other queuing or non-queuing systems.

نظرية لغات البرمجة	رك٣٦٤
Programming Languages Theory	**MC364**

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

Inductive Definitions - Levels of Syntax - Binding and Scope - Static and Dynamic Semantics - Functional Core Language - Recursion, Iteration, Fixed Points - Products and Records - Sums and Variants - Polymorphism - Data Abstraction - Recursive Types – Subtyping

معالجة الصور	رك٣٦٦
Image Processing	**MC366**

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

Scope and applications of image are proceessing.Perspective transformations (Modeling picture taking, perspective transformations in homogeneous coordinates and with two reference frames) .The spatial frequency domain (the sampling theorem, template matching and the convolution theorem, spatial filtering). Enhancement and Restoration, image segmentation. Image representation :(spatial differentiation and smoothing, template matching, region analysis, contour following). Descriptive methods in scan analysis. Hardware and software considerations. Applications.

اللغات الصورية ونظرية الاليات	رك٣٦٧
Formal Language and Automata	**MC367**

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

Alphabets and languages. Finite representation of language. Deterministic and non- deterministic finite automata and their applications. Equivalence considerations. Regular expressions. Context-free languages. Regular languages, pushdown automata. Properties of context-free languages. Determinism and parsing top-down parsing and bottom-up parsing. Turing machines: computing with Turing machines, combining Turing machines, and nondeterministic Turing machines.

مبادىء فيزياء الجوامد	ف٣٥٠
Introduction to Solid State Physics	**P350**

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

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 – Theory of dielectrics.

	الدرجات					الساعات			معالجات دقيقة	٣٢٥ هـ
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	**Microprocessors**	**E325**

	الدرجات					الساعات			بحوث عمليات (2)	٤٢٦ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	**Operations Research (2)**	**M426**

Classical optimization techniques – Numerical methods for unconstrained and constrained optimization problems – Calculus of variation – Optimal control problems (Pontriagen's maximums principals – Bellman's dynamic programming).

	الدرجات					الساعات			موضوعات مختارة فى الرياضيات (2)	٤٢٧ ر
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	**Special Topics in Mathematics**	**M427**

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

	الدرجات					الساعات			المقال والبحث	٤٠٠رك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	0	0	0	90	2	0		**Research projector Article**	**MC400**

	الدرجات					الساعات			حسابات علمية(1)	٤٥١ رك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	2/-	2	**Scientific Computations(1)**	**MC451**

Numerical software packages; NAG, SPSS, Minitab – Methods for random number generators - Monte Carlo simulation – Interval Computation – Some problems in computational physics; (e.g., solution of transcendental equations arising from physics, Kepler equation) – Some problem in computational chemistry; (e.g., Stiff ordering differential equations in chemical reaction Kinetics.)

	الدرجات					الساعات			حسابات موزعه	٤٥٢رك
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

	الدرجات					الساعات			امن الحاسب	٤٥٣رك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	**Computer Security**	**MC453**

Overview , characteristics of computer intrusion , points of security vulnerability, methods of defense, Basic encryption and decryption: different types of ciphers, characteristic of good ciphers ,Security involving programs, database security, reliability and integrity , sensitive data , the inference problem, multilevel data security.

		رك٤٥٥	موضوعات مختارة فى علوم الحاسب(2)
Special Topics in Computer Science(2)		**MC455**	

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

Elected by Math. Dept. to meet new directions in Computer Science

		رك٤٥٧	نظرية الحسابات
Theory of Computation		**MC457**	

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

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. Unsolvable problems and their relevance to the semantics of programming.

		رك٤٥٨	نظرية المترجمات
Compilers		**MC458**	

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

This course studies the principles of programming languages with an emphasis on programming language implementation and compiler design. This includes various techniques for describing and defining a language, as well as techniques for implementing compilers. Topics to be covered over two terms include: lexical analysis , syntactic analysis , recursive descent parsing, LR parsing, syntax-directed translation, type checking , run-time environments, code generation, code optimization, and various language design issues.

		رك ٤٥٩	الشبكات العصبية
Neural Networks		**MC459**	

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

Bioligical neural networks - Definition of artificial neural networks - Basic types of artificial networks - Learning algorithms for artificial neural networks - Application of neural networks.

		رك ٤٦١	الرسم بالحاسب
Computer Graphics		**MC461**	

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

Software and hardware for interactive computer graphics. Implementation of device drivers, 3-D transformations, clipping, perspective, and input routines. Data structures, hidden surface removal, graphics devices and languages, 2- and 3-D object representations, and various aspects of rendering realistic images. Students will be expected to implement programs which span all stages of the 3-D graphics pipeline, including clipping.

		رك٤٦٢	حسابات علمية (2)
Scientific Computations(2)		**MC462**	

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

Soft computing; genetic and evolutionary algorithms, neural networks, Granular Computing, and swarm intelligence – Methods of cryptography – Methods for computational fluid dynamics – Elements of Computational Biology and bioinformatics, and their applications.

MC463 — تراسل البيانات / Data Communications — ٤٦٣ رك

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

The study of remote access to and communications between computers. Network architectures and topology; communication protocols and interfaces, functional layers; transmission facilities including communications equipment, line utilization, switching, and error handling; standard protocols; network interfaces including routing and flow control.

MC464 — تنقيب البيانات / Data Mining — ٤٦٤ رك

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

Data Mining Overview – Data Warehouse – Data Preprocessing – Classification – Clustering – Prediction - Logistic Regression – Association Rules

MC466 — التشفير / Cryptography — ٤٦٦رك

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

Basics of Modern Cryptography - Cryptographic Tasks - Public Key Cryptography - Ciphers and Hashes - Cryptanalysis - Cryptographic Software

MC467 — تصميم وهندسة البرمجيات / Software Design and Engineering — ٤٦٧ رك

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

Design and engineering perspectives. Software construction. Decomposition and modularity; coding style; naming; configuration; testing; efficiency. Object-oriented design. Interaction styles; user models; requirements gathering; prototyping; evaluation. Design challenges. Project management. Models and metaphors of development

P451 — فيزياء اشباه الموصلات والاغشية الرقيقة وتطبيقاتها / Physics of semiconductors and thin solid and its applications — ٤٥١ف

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

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.

421E — بنية الحاسب / Computer architecture — ٤٢١هـ

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

وكيل الكلية لشئون التعليم والطلاب