



محتويات مقررات برنامج

Courses' Content

جيولوجيا البترول

Petroleum Geology



كلية العلوم

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

١٥ م ج	لغة انجليزية (1)
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

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

٥٠ م ج	قضايا مجتمعية
Societal Issues	UR050

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

١١ م ج	ادارة اعمال
Management	UR011

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

١٢ م ج	تاريخ العلوم
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.



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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 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 -



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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)

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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



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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

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

معادلات تفاضلية لغير طلاب الرياضيات	٢١٤ر
Differential Equations for non-Mathematics students	M214

Formation of ordinary differential equations (ODE's) - ODE's of first order and first Degree – ODE's of first order and higher degrees – Applications – Numerical solution of ODE's of the first order and the first Degree – Linear ODE's of higher Orders with constant Coefficients - Linear ODE's of higher orders with Variable Coefficients (Euler and Lagrange methods) .Applications.

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

احصاء حيوى	٢٤١رأ
Biostatistics	MS241

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.



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الدرجات					الساعات			فيزياء الاهتزازات والموجات	٢١٢ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	3	0	3	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			مبادئ الفيزياء الحديثة	٢٢٥ ف
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Principles of Modern Physics	P225

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			كيمياء عضوية لغير طلاب الكيمياء	٢١١ ك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Organic Chemistry for non Chemistry Students	C211

Chemistry of Aliphatic Compounds – Chemistry of Selected Aromatic Compounds (Practical :Selected practical experiments)

الدرجات					الساعات			مساحة مستوية	٢٠٠ هـ
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Plane Surveying	E200

الدرجات					الساعات			أساسيات علم الطبقات	٢١١ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Principles of Stratigraphy	GP211

Principles of Stratigraphy – laws and guidelines – Stratification – Lithostratigraphy – Unconformities – Concept of sequence stratigraphy –The geologic column -Geochronology – Chronostratigraphy of Crypto- & Phanerozoic – Boundary stratigraphy - Regional Stratigraphic Correlation of Oil and Gas Fields – Inter-regional Stratigraphic Correlation (biological, chemical, magnetic and geophysical)

الدرجات					الساعات			أساسيات البتروفيزياء	٢٢٦ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Basics of Petrophysics	GP226

Rock Physics: Mechanical behaviour of dry and fluid-saturated rocks - Acoustic properties - Electric conductivity - Di-electric properties - Thermal conductivity - Magnetic properties
Applied Petrophysics: Fundamental concepts - Basic rock properties - Depositional systems and petrophysical rock parameters -Porosity and permeability - Formation resistivity and water saturation - Capillary pressure - Wettability - Petrophysical impact on economic uncertainty - Petrophysical data processing

الدرجات					الساعات			علم البلورات والمعادن	٢٣٥ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Crystallography and Mineralogy	GP235



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Basics of Crystallography: Crystals – Symmetry – Crystal forms and parameters – The main crystallographic systems – Stereographic projection.

Basics of mineralogy: Atomic structures - Isomorphism and polymorphism - Continuous and discontinuous reaction series - Silicate and non-silicate minerals – Rock-forming minerals - Crystallography and mineral optics

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

٢٥٣ ج ب أساسيات الجيوفيزياء

Principles of Geophysics GP253

Basic physical properties of rocks, minerals and soils – Introduction to main geophysical methods (seismic reflection and refraction, resistivity, electromagnetic, gravity and magnetic) - Basic equations, field measurements and methodology and correction - Interpretation of gravity and magnetic surveys and different applications - Seismic interpretation

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

٢٠٩ ج ب جيومورفولوجي

Geomorphology GP209

The scope of geomorphology - Some fundamental concepts & principles - The fluvial geomorphologic cycle - Karsting & karst topography - Arid landscapes - Influence of geologic structures upon topography - Applied geomorphology

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

٢١٧ ج ب حفريات لافقارية وبيئة قديمة

Invertebrate Palaeontology and Palaeoecology GP217

Invertebrate Palaeontology: Fossil and fossilization - Mode of preservation – Fossil record – Taxonomy and evolution - Description and geologic importance of major invertebrate fossil groups - Fossils in core thin sections

Palaeoecology: Environmental definitions and terminology – Operational data bases – Nature of fossil record – Taphonomic processes – Taxonomic uniformitarianism – Environmental tolerance of organisms – Community palaeoecology – Applications for palaeoenvironmental reconstructions

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

٢٠٢ ج ب إحصاء جيولوجي

Geostatistics PG202

Introduction – Data collection - Variance & Covariance - Basic statistics - Univariate statistics - Detrended correspondence analysis, DCA - Principal component analysis, PCA - Multivariate (ordination) statistics (e.g.; Redundancy analysis, RDA; Canonical correspondence analysis, CCA) - Cluster analysis – Spatial aspects of data

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

٢٠٨ ج ب نظم المعلومات الجغرافية (GIS)

Geographic Information Systems (GIS) PG208

Components of GIS Technology - The digital map - Devices and file types - GIS data and data sources - Georeferencing and modeling - Spatial vs. attribute data - Raster vs. vector data -Vector data structures - Reference systems and datums - Map features (points, lines, polygons) - Topology and spatial analysis - Symbolizing layers and classifying continuous variables - Interpolation and GIS application fields

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

٢٢٤ ج ب المكتشفات المانعة في الاستكشاف النفطي

Fluid Inclusions in Petroleum Exploration PG224



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Organic and inorganic fluid inclusions – Fluid inclusions and their application to understand maturation of organic matter and oil migration. Using fluid inclusions to explore for oil and gas – Fluid inclusions stratigraphy – Using fluid inclusions in recognizing past and present petroleum distribution – Fluid inclusions in relation to product type and quality, filling processes, seal integrity, fluid pressure compartments, oil-water transition zone and reservoir connectivity

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

٢٣٢ ج ب أساسيات علم الصخور النارية والمتحولة

Basics of Igneous and Metamorphic Petrology PG232

Igneous Petrology: Structures, textures and classification of igneous rocks - Petrogenesis, movement and modification of magmas - Basalts & ultramafic volcanic rocks- Rhyolites & Pyroclastic rocks - Andesites and related rocks - Ultramafic – Mafic complexes and related rocks - Granites, Granodiorites and related rocks - Alkaline igneous rocks and Carbonatites

Metamorphic Petrology: Agents and conditions of metamorphism - Structures, textures and classification of metamorphic rocks - Regional metamorphism - Dynamic metamorphism

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

٢٦٣ ج ب أساسيات الصحة والأمان

Basics of Health and Safety PG263

Basics of Health: Health risk assessment - Health impact assessment - Health and medical emergency facilities - Fitness for duty - Food and water hygiene - Thermal extremes - Industrial hygiene - Psychological and social agents

Basics of Safety: Safety techniques for hazards - Hazards control - Safety culture - Chemical and biological agents – Work environment - Fire safety - Scaffold safety - Noise and vibration

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

٢٦٤ ج ب أساسيات جيولوجيا البترول

Basics of Petroleum Geology PG264

Definition - Composition and occurrences of hydrocarbons - Sedimentary versus igneous origin – Source and reservoir rocks - Hydrocarbon traps - Classification of petroleum traps and seals - Outline of geological, geophysical, geochemical and subsurface exploration for petroleum - Drilling and well logging - Outlines of petroleum engineering - The economics of exploration and development - Transportation and marketing of petroleum

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

٢٦٥ ج ب أساسيات جيولوجيا المياه وجيوكيمياء المياه

Principles of Hydrogeology and Hydrogeochemistry PG265

Hydrogeology: Water Cycle in Nature- Groundwater resources - Water Falls & surface Water- Hydrogeology of groundwater reservoirs – Groundwater flow properties - Aquifer properties - Water wells - Well tests - Groundwater flow laws - Groundwater exploration - Groundwater quality - Groundwater pollution - Ground water management – Water and oil in petroleum exploration

Hydrogeochemistry: chemical composition of natural and contaminated groundwaters; inorganic parameters in natural waters; Calculation and presentation of hydrochemical data as a basis for interpretation; Chemical reactions and processes in groundwater systems; Chemical evolution of groundwater; Aqueous geochemistry; Equilibrium and disequilibrium; Dissolution and precipitation of minerals; Carbonate system

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

٣٠٠ ر ك حزم البرامج الرياضية والاحصائية

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



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

حيود الاشعة وتطبيقاتها ٣٥٢ ف

Diffraction of Waves and its Applications P352

Basic idea of diffraction - Review of crystalline Structure - Reciprocal space - X-rays, production & detection - X-ray cameras - Models For diffracted intensity - Small-angle scattering of X-rays - Electron and neutron diffraction- Analysis of X-ray diffraction patterns. Determination of the unit cell parameters using computer programs.

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10	10	10	20	50	3	3/-	2

٣١٣ ج ب حفريات دقيقة وبالينولوجى

Micropalaeontology and Palynology PG313

Micropalaeontology: Study of main faunal microfossil groups (morphology, taxonomy and stratigraphy) – Application for palaeoenvironmental and palaeoceanic reconstruction – Role of microfauna in oil exploration
Palynology: Plant kingdom and its ancient representatives - Dinoflagellates - Pollen, spores and other acid-resistant palynomorphs - Palynofacies - Plant fossil record - Qualitative and quantitative palynology - Palynology and sedimentation – Palynostratigraphy – Kerogen and optical source rock evaluation - Palynofacies and palaeoenvironmental reconstruction – Palynology and palynofacies in oil and gas exploration

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

٣٠٢ ج ب المخاطر والكوارث الجيولوجية

Geologic Hazards and Disasters PG302

What is a geohazard – Processes and mechanisms of geologic hazards – Vulnerability and mitigation - Hazard risk assessment - Drought, Desert hazards – Mass movements and landslides – Flood, tsunami and volcanic hazards -Tectonic hazards (earthquakes) - Seismic hazards and hydrocarbon exploration – Oil rig disasters and preventing blow-outs

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

٣٠٤ ج ب تقنيات حقلية وتخریط

Field Techniques and Mapping PG304

A- Definitions, terminology and field equipments – Devices of geological surveying– Field characteristics of rocks – Field relations – Types of contacts – Measuring stratigraphic sections – Sampling procedures - Geological cross-sections and mapping – Recognition of geological features – Geological reporting
B- Short (1-2 days) field excursions to nearby desert areas, and longer (10 days) field excursion to a chosen Egyptian region: The trip should concentrate on field techniques, data recording and interpretation. Practical skills will be gained in mapping and logging sedimentary sequences - field recording and interpretation including structural data, current directions, construction of cross-sections, reconstruction of palaeoenvironments and field palaeontology

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

٣٠٨ ج ب التخریط تحت السطحي

Subsurface Mapping PG308

Concepts on mapping - Various types of maps and cross sections - Constructing maps in conventional ways as well as using modern techniques including computer approach - Contouring and contouring techniques - Cross sections - Isopach maps - isolith maps - Isocore maps - Fault maps (Fault shapes and displacement distributions) - Constructing fault-plane maps - Fault-cutoff lines in computer mapping -Structure maps - Integration of geophysical data in subsurface mapping - Log correlation techniques - Juxtaposition diagrams for trap and seal analysis



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الدرجات					الساعات			مقرر خاص في الجيولوجيا	ج ٣٠٩ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Special Course in Geology	PG309

Geological topics chosen by the Department Council

الدرجات					الساعات			طباقية زمنية وحياتية	ج ٣١٦ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Chrono- and Biostratigraphy	PG316

Chronostratigraphy: Geochronology - Time scales - Derivation & origin of names of fundamental chronostratigraphic units - Global Stratotype Sections and Points (GSSPs) - Biochrons & geomagnetic polarity reversal history of the Phanerozoic- Global stratigraphic correlation - Astronomical time scale - Problems in Chronostratigraphy and updating of the GSSP and the stratigraphic guide
Biostratigraphy: Biostratigraphy and biozonation – Fossils and biogeography – Geologic time keepers – Dating and correlation of fossil associations –World Phanerozoic index fossils

الدرجات					الساعات			رسوبيات وأنظمة ترسيب	ج ٣٢٥ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Sedimentology and Depositional Systems	PG325

Sedimentology: Textures- Sedimentary structures - Mineral composition – Provenance - Classification of sedimentary rocks and their diagenesis - Role of diagenesis in petroleum exploration
Depositional Systems: Depositional processes - Methods of diagnosis – Classification and types of sedimentary environments – Detailed characteristics of selected sedimentary environments (continental, transitional, marine) and their petroleum potentialities

الدرجات					الساعات			جيولوجيا البحار	ج ٣٢٦ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Marine Geology	PG326

General introduction to marine geology - Ocean morphology – Divisions of marine realm – Biogenic processes at the seafloor - Marine Fauna – Nearshore processes - Rock and biogeochemical cycles and hydrothermal circulation – Ocean circulation patterns - Sea level and climate - Gas hydrates and climate - Reading global changes within oceanic sediments - Marine sedimentation and hydrocarbons - Palaeoceanography

الدرجات					الساعات			جيوكيمياء عضوية	ج ٣٣٢ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Organic Geochemistry	PG332

Basics of organic geochemistry – Production, preservation and degradation of organic matter - Fate of organic matter - Conditions of accumulation of organic rich sediments - Formation of humic material, coal and kerogen - Generation and composition of petroleum - Organic geochemistry of Sulfur - Environmental behaviour of organic compounds - Source rock quality, maturity, and potential – Rock-Eval pyrolysis – Biomarkers - Geochemical correlation: oil-to-oil, oil-to-source rock

الدرجات					الساعات			أساسيات الجيولوجيا التركيبية وميكانيكا الصخور	ج ٣٤٧ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Principles of Structural Geology and Rock Mechanics	PG347

Structural Geology: Levels and types of structural studies
Folds and Folding: Geometric and kinematic classification -theoretical analysis of folding - Diapirs and impact structures- Brittle failure - Joints and veins, Origin and tectonic interpretation of joints. **Faults and Faulting:** Geometry, characteristics of fault zone - Fault



محتويات مقررات برنامج

Courses' Content

جيولوجيا البترول

Petroleum Geology



كلية العلوم

systems – Genetic classification of faults –Faulting and society. Cleavage- Foliation and lineation Structural analysis techniques

Rock Mechanics: Mechanical properties of rocks – Forces and stress – Strain types –Stress - Strain diagrams - Factors influencing rock deformations

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

ج ٣٤٨ ب جيولوجيا تصويرية واستشعار من بعد

Photogeology and Remote Sensing PG348

Photogeology: Introduction and characteristics of aerial photographs- Stereoscopic vision - Parallax and height difference formula- Analysis of aerial photographs (Geomorphologic, lithologic and structural interpretation) - Geologic mapping using aerial photographs.

Remote Sensing: Fundamental Considerations - Electromagnetic spectrum -Satellite imagery and image characteristics – Common remote sensing techniques- Digital image processing and enhancement applications of remote sensing in geology, environmental science, mineral and petroleum exploration

الدرجات					الساعات		
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L
10	10	10	20	50	3	4/-	2

ج ٣٥١ ب التنقيب الجيوفيزيائي عن الزيت والغاز

Geophysical Exploration for Oil and Gas PG351

A- Principles, data acquisition - Data processing, interpretation approach and applications of magnetic, gravity, seismic, and electrical surveys - Using magnetic and gravity anomaly maps in primary delineation of rock types and basinal configuration - Application of magnetic and gravity survey projects, for the successful exploration of the hydrocarbon bearing structures - Recognizing common geological structures and features from seismic sections

B- Summer training in, for example, petroleum companies and related laboratories

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

ج ٣٥٣ ب نمذجة سيزمية

Seismic Modeling PG353

Review of the physical basis of the seismic method -2D and 3D seismic acquisition and processing - Time structure Map – Depth converted structure map - Stacking and deconvolution – Migration - Reprocessing - Post-stack processing - Coherency processing - Particular characteristics and pitfalls for 2D and 3D seismic methods - Techniques for viewing seismic data - Project preparation - Building the database - Velocity data acquisition - Editing and integration of sonic and density logs - VSP - Synthetic seismograms - Structural interpretation - Stratigraphic interpretation – AVO - Seismic attributes

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

ج ٣٦٤ ب الأنماط التركيبية في جيولوجيا البترول

Structural Styles in Petroleum Geology PG364

Structural families and styles - Fold and fault geometry - Predicting structure from stratigraphy - Regional arches and domes - Compaction and substratal solution - Wrench faults: simple, convergent, and divergent - Fold-thrust belts - Fault-related folds - Basement-involved contraction - Vertical and rotational block uplifts - Half-graben and full graben rift systems – Diapirs - Salt sheets - Plate-tectonic habitats of structural assemblages

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

ج ٣٦٥ ب تحليل الأسطوانات اللبية

Core Analysis PG365

Basic: Core handling - Sidewall coring – Measuring porosity and permeability – Grain density - core gamma Special: Resistivity index – Formation factor – Cation exchange capacity - Relative permeability – Capillary pressure – Wettability – Porosity and permeability under overburden pressure



محتويات مقررات برنامج
Courses' Content
جيولوجيا البترول



كلية العلوم

Petroleum Geology

الدرجات					الساعات			تقييم المخاطر وتحليل القرار	ج ٣٦٧ ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Risk Assessment and Decision Analysis	PG367

Decision models; low probability, high-consequence events, flexibility and control; project threats and opportunities - Monte Carlo Simulation: portfolio problems; optimization; advantages and limitations - value measures; multiple objectives; risk aversion - Modeling the Investment: sensitivity analysis; modeling correlations - Basic Probability and Statistics: four fundamental rules; choosing distribution types; common misconceptions about probability; avoiding biases in estimation - Pitfalls to avoid - Guidelines for good analysis practice; team analyses; computer tools (discussion and demonstrations); mitigating risks

الدرجات					الساعات			كيمياء البترول والبتروكيماويات	٤٥١ ك
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	3/-	2	Petroleum Chemistry and Petrochemicals	C 451

Crude Oils – Evaluation of Crude Oils - Refining of Petroleum – Petrochemicals Derived from Petroleum Fractions
(Practical: Selected practical experiments)

الدرجات					الساعات			مشروع بحثي	٤٠١ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
0	50	50	0	0	2	0	2	Research Project	PG401

Research Project: The Department Council designs the research project (or projects) to be carried out by the students

الدرجات					الساعات			جيولوجيا بيئية	٤٠٢ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Environmental Geology	PG402

An overview of our planetary environment - Internal processes (general principles of plate tectonics – Earthquakes, earthquake-related hazards and their reduction – Volcanoes, volcanoes-related hazards and predictions); Surface processes (Stream and flooding – Coastal Zones and process – Mass movements – Geology and climate: (Glaciers, Deserts and desertification, Global climate trends) – Natural resources - Hazard assessment - Hazard management

الدرجات					الساعات			مقرر حقلي	٤٠٤ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	50	0	1	3	2	Field Course	PG404

Field work and training (10 days field work), applying different techniques and methods using stratigraphical, sedimentological, petrological, palaeontological and structural principles. Each student should prepare an oral presentation besides a geological report which is evaluated as a practical paper

الدرجات					الساعات			جيولوجية مصر والامكانات البترولية	٤٠٥ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Geology of Egypt and Petroleum Potentialities	PG405

Outline of the geomorphologic and tectonic provinces of Egypt - Outline of the basement geology of Egypt – Details of the distribution, stratigraphy and facies of the Phanerozoic of Egypt – Onshore and offshore Phanerozoic oil and gas potentialities



محتويات مقررات برنامج

Courses' Content

جيولوجيا البترول

Petroleum Geology



كلية العلوم

الدرجات					الساعات			الطفلة الزيتية ومعادن الطين	٤٢٥ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Oil Shales and Clay Mineralogy	PG425

Oil Shales: Definition, petrology, organic matter, and origin of oil shales - Oil shale extraction and exploitation – Mining and processing – In situ conversion process - Examples of famous world oil shales - Oil shale resources and stratigraphy in Egypt – Tar sand
Clay Mineralogy: Definitions -Composition of clay minerals -Classification and nomenclature of clay minerals -Structure and x-ray diffraction of clay minerals - Clay minerals in oil exploration

الدرجات					الساعات			طباقية سيزمية وتتابعية	٤٢٦ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Seismic and Sequence Stratigraphy	PG426

Sequence Stratigraphic Seismic Tool: Principles of seismic stratigraphic interpretation - Resolution of seismic data - Seismic processing and display for stratigraphic interpretation - Seismic reflection termination patterns - Seismic facies and attribute patterns
Principles of Sequence Stratigraphy: Concept of scale sequence stratigraphy vs. lithostratigraphy and allostratigraphy - Sea level changes and base line - Accommodation and shoreline shifts - Orders and causes of stratigraphic cycles - Surfaces and their criteria (type-1 & type-2 sequence boundaries, transgressive surface, maximum flooding surface) - Hierarchies in sequence stratigraphy (sequences, systems tracts, parasequences). Outlines of siliciclastic and carbonate sequence stratigraphy - Examples of the sequence stratigraphy of some Egyptian oil fields

الدرجات					الساعات			تحليل حوضي وأحواض ترسيب مصرية	٤٢٧ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Basin Analysis and Sedimentary Basins in Egypt	PG427

Basin Analysis: What is basin analysis – Controls on basin analysis (sediment supply, tectonics, sea level) - Types of basins (rift basins, passive margin basins, subduction-related basins - intracontinental basins) – Outlines of methods of sedimentary basin analysis – Application to petroleum play assessment
Sedimentary Basins in Egypt: Distribution, origin and petroleum potentialities of the Western Desert, Nile Valley and Delta basins - Gulf of Suez and northern Red Sea basins and the Mediterranean offshore basins

الدرجات					الساعات			جيولوجيا النظائر	٤٣٣ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Isotope Geology	PG433

Introduction – Atomic structure – Decay of atoms – Radioactive decay – Absolute measuring of geological time – Application of isotope geology in rocks, water, sulphide minerals and oil

الدرجات					الساعات			الخزانات الرملية والكربوناتية	٤٦٢ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Sandstone and Carbonate Reservoirs	PG462

Sandstone Reservoirs: Geometry of sandstone bodies and their characteristic log patterns - Prediction of reservoir size, shape, and trend – Integrated interpretation of a sandstone reservoir in terms of its geometry (3D) - Pinched-out, palaeoflow and lateral distribution across the sedimentary basin - Analysis of sandstone depositional systems - Petrography and diagenesis of the different sandstone types - Sedimentary controls on cementation - Porosity and permeability – Sandstone reservoir quality
Carbonate Reservoirs: The carbonate factory in space and time - Carbonate platform type and development – Distribution of the carbonate grains and fossils in the different sedimentary environments - Carbonate facies models – Petrography and diagenesis of carbonates - Models of dolomitization - The carbonate–evaporite system - Characteristics of carbonate pore systems - Fate of early formed porosity - Carbonate reservoir modeling - Exploration strategies in carbonate terrains



محتويات مقررات برنامج

Courses' Content

جيولوجيا البترول

Petroleum Geology



كلية العلوم

الدرجات					الساعات			سجلات الآبار	٤٦٣ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Well Logging	PG463

I) Well drilling, Well bore environment, porosity, permeability and formation factor, borehole resistivity, nuclear and sonic logging theories, Logging practice

II) Open-hole logging techniques: Caliper logs, self potential, unfocused and focused resistivity logs, microresistivity, dipmeter and Induction logs, nuclear logs (GR, density and neutron logs), sonic logs, borehole televiewer, gravity and magnetic logs.

III) Data processing and interpretation methods :

a) porosity and petrofacies; b) permeability; c) lithology and texture; d) sedimentary structural features and sequences; e) sediment diagenesis; f) fracture detection and g) fluid saturation

الدرجات					الساعات			الحفر والإنشاء البري والبحري	٤٦٤ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	On-shore and Off-shore Drilling and Construction	PG464

Basic drilling technology - Produced formation water - Directional drilling - Completing the well - The dry well - Drilling fluid - Rig and cementing equipments -Offshore (oil) platforms - Oil and gas pipelines - Subsea oil and gas production - well control operations -Hole problems

الدرجات					الساعات			الأقاليم النفطية في الشرق الأوسط والعالم	٤٦٨ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	30	0	50	2	0	2	Oil and Gas Provinces in the World and Middle East	PG468

The major world 27 regions of oil and gas fields - Tectonic control of the world oil and gas fields - World oil and gas production and consumption - Future of the world oil and gas - Characteristics of the main Middle East dominant oil-producing reservoirs (Jurassic Platform Carbonates - Zagros Fold Belt - Cretaceous Sandstone Reservoirs - Cretaceous Rudistid Reefs - Paleozoic of Arabia and Oman)

الدرجات					الساعات			مقرر خاص في جيولوجيا البترول	٤٦٩ ج ب
oral	ACT	Mid_T	Prac	Wr.	CH	P/T	L		
10	10	10	20	50	3	2/-	2	Special Course in Petroleum Geology	PG469

Geological topics chosen by the Department Council