المحتوى العلمى لمقررات المستوى الأول (برنامج الجيولوجيا) طبقا اللائحة الداخلية للكلية بنظام الساعات المعتمدة
الفصل الدراسى الأول ٢٠١٦/٢٠١٧م

Math101 – Algebra and Differentiation **ر١٠١ – جبر وتفاضل**

Algebra: Mathematical induction and partial fractions. Binomial theorem and its applications, solution of cubic equations, solution of 4th degree equations, sets, subsets, set operations and inductively definition of sets, equivalence relations, equivalence classes, partitions and partial order, maps, composition of maps, kinds of maps and inverse functions.

Differentiation: A) Review and preparation for calculus. B) Limits and their properties. C) Differentiation: (Basic ideas; tangent of curve; the product and quotient rule; the chain rule); D): higher derivatives. Differentiation of trigonometric functions and their inverse; Differentiation of the logarithmic function; The exponential function, hyperbolic functions and their inverse. Applications of Differentiation

٣ ساعات معتمدة (٢ ساعة نظرى – ١ ساعة تمرين تطبيقى)

Ph101 - Properties of Matter and Heat **ف١٠١ – حرارة وخواص مادة**

Part I: Properties of Matter: Units and dimensions – Motion in a circle – Oscillations – Gravity–Moment of Inertia - Surface tension – Viscosity – Elasticity.

Part II: Heat: Theories of the heat energy – Temperature scales and measurements – Thermal Expansion – Calorimetery – Vapors – Heat transfer.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

Chem102 - Principles of Inorganic Chemistry **ك١٠٢ – أسس الكيمياء غير العضوية**

Chemical calculations . Atomic spectra (Electromagnetic waves, Boh's theory, principles of wave mechanics). Atomic structure. Electronic configuration of atoms. Periodic Table and the general properties of representative elements (size of atoms and ions , ionization energy, electronic affinity , electro negativity , electro positivity and polarization. Oxidation states. Types of chemical bonds (ionic, covalent , coordinate , hydrogen and metallic). Lewis structure and formal charge. Theories of bonding: valance shell election, pair repulsion (VSEPR), valance bond (VBT) , molecular orbital theory (MOT) and molecular geometry.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

G110 Physical and Historical geology **ج١٠١ - الجيولوجيا الطبيعية والتاريخية**

Physical Geology: Introduction to the study of the Earth Science and its branches - Theories on the origin of the Universe, the Solar System and the Earth - The atmosphere, the hydrosphere, the lithosphere and the Earth's interior - The Earth's crust - Plate tectonic and the origin of mountains and oceans - Geologic processes shaping the Earth's surface: External processes; Weathering (physical and chemical). wind action and sand dunes, running water (rainfall, rivers and deltas), groundwater and its geologic action, waves and current actions in coastal areas, glacial erosion - Tectonic movements and the internal processes - Structures - Earthquake belts, intensity of earthquake - Volcanicity. Laboratory studies of topographic and geologic maps.

Historical Geology: Introduction to the earth's history, origin of the Earth and its place in the solar system, the most important events (e.g. orogenic, biologic, sedimentation, climatic, etc.) occurred during the geologic history of the earth starting from the Precambrian to the present time. Course syllabus includes also origin of the atmosphere and ocean, origin of life on the earth, orbital forcing and its effect on the earth's climate, Earth's age-dating, and sedimentary environments. Precambrian, Early Paleozoic (Cambrian-Devonian), Late Paleozoic (Carboniferous-Permian), Triassic-Jurassic, Cretaceous, - Paleogene-Neogene important events, the Messinian salinity crisis. Quaternary history of mammals and first appearance of man. Extinct fossil groups and vertebrate evolution.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

شئون الطلاب	وكيل الكلية لشئون التعليم والطلاب	عميد الكلية
أ/ أنس شرف الدين	أ.د. مجدي السيد محفوظ	أ.د. أحمد ابراهيم خضير

G120 Introduction to Geophysics **ج١٠٢ - مقدمة فى الجيوفيزياء**

Introduction, definition and branches of geophysics. Gravity field of the Earth. Geoid, GPS and isostasy. Seismic methods and earthquakes. Magnetic and paleomagnetic methods. Electric and geothermal methods. Borehole geophysics. Practical work of some measured geophysical parameters.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

B110 - Systematic Botany and Zoology **ن١١٠ - تقسيم مملكة نباتية وحيوانية**

Part I - Systematic Botany: Introduction, systems of classifications, Kingdom Monera, Kingdom Protista and plant kingdom. Differences between prokaryotic and eukaryotic cells, viruses, bacteria, fungi, algae, bryophyte, Pteridophytes, Gymnosperms, Angiosperms. Examples and life cycles of chosen examples

Part II – Systematic Zoology: Classification systems; old and new (practical, artificial, modern, recent). Binomial nomenclature, Evolution; theories and applications, Species origin, phylogeny, and Phylogenetic trees; different examples. Classification and general characters of Kingdom Animalia such as: Protista, Spongy, Cnidaria, Platyhelminthes.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

English Language **ع١٢٠ – لغة إنجليزية**

Part I: Definitions, Language development, Reading comprehensions on different science topics such as genetics, recent discoveries, new technologies, etc., knowing the different English language accents. Part II: Grammar: tenses, sentence structure, and how to write correct English. Part III: Writing: Using basic English grammar and sentence structure to write a report or a short essay of students' choices. Part IV: Vocabulary: identification of scientific terms, confusable words, and proper use of prepositions.

٢ ساعة نظرية معتمدة

الفصل الدراسى الثانى ٢٠١٦/٢٠١٧م

Math103 - Geometry and Integration **ر١٠٣ – هندسة وتكامل**

Geometry: coordinate plane – rectangular coordinates and polar coordinates. Change of axes – straight line in plane and the common equation of two lines – circle – the conic section: parabola – ellipse – hyperbola. The general equation of the second degree in two variables

Integration: Integration and techniques of Integration: (Integration by substitution - Integration of trigonometric and hyperbolic functions - Integration by parts - Integration of rational functions by partial fractions) – Application of integration

٣ ساعات معتمدة (٢ ساعة نظرى – ١ ساعة تمرين تطبيقى)

Ph102 – Electricity, Magnetism and Optics **ف١٠٢ – كهربية ومغناطيسية وضوء**

Part I: Electricity and Magnetism Electrical Units – Electric charge – Coulomb's law of electric force – Electric field – Electric potential – Gauss Theory – Electric current – Ohm's law – Heat effect of electric current – Chemical effect of electric current – Magnetic poles – Coulomb's law of magnetic force – Magnetic effect of electric current – Magnetic force on moving charge – Magnetic force on a conductors carries electric current.

Part II: Geometrical Optics: Nature of light – Refraction of light – Reflection of light – Dispersion of light through prisms – Total reflection of light– Reflection of light through a spherical surfaces – lenses – Newton's law of lenses – Eye – Optical Instruments.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

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Significant figures, Measurement and unit: the gaseous state, the gas laws, real and ideal gases, the liquid state and the solid state .Thermochemistry , themo-chemical equations , hess's law , flh for various processes, bond energies, variation of flh with temperture; heat capacities: kirchoffs equation . The solution process, ways of Expressing concentration. Facters affecting solubility . raoult's law colligative properties-lowering the vapor pressure"boiling-point elevation- freezing point Depression-Osmosis-Determination of molar Mass . chemical equilibria : The equilibrium state . The ReactionQuotient- The relationship between Kc and Kp- Heterogeneous Equilibria –Le-Chatelier's principle and chemical Equilibrium .Equilibria in Aqueous solutionsThe arrhenius theory of acids and Bases . Bronsted-Lowry and lewis theory of Acids and Bases – Auto-ionization of water and PH-Ionization Contactes OF Weak Electrolytes and polyprotic Acids – common Ion Effect of Buffers – Hydrolysis constants – Acid – Base Titration Curves . Solubility and Ksp Relationship.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

G210 Crystallography and Mineralogy **ج١٠٣ - البلورات والمعادن**

Crystallography: Definition and crystal parts, interfacial angles and their law, crystallographic elements, crystal symmetry, crystal habit and forms, crystal aggregates, crystal systems, holohedral and hemihedral forms, hemimorphism and enantiomorphism, axial ratios-crystal parameters and Miller indices, zone, zone axes and zone symbols and law. General description of the crystal systems. Stereographic projection. Practical examination of models representing crystal forms of seven crystal systems.

Mineralogy: Definitions - Physical and chemical, properties of minerals - Chemical compositions - Origin of minerals - Classification of minerals - Minerals of the Earth's crust. Mineral associations in rocks and ore deposits - Description of crystal forms; genesis, field occurrences and uses of some important minerals. Laboratory investigation of hand specimens representing the major mineral groups.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

G220 Subsurface Geology- 2h/W **ج١٠٤ - جيولوجيا تحت سطحية**

Definition, application of subsurface geology, pure scientific value, prospecting and exploration of economic importance. Construction purposes. Information needed for subsurface evaluation. Sources of subsurface geological data. Methods for subsurface geology. Drilling. (structural, stratigraphic and drilling for other purposes). Geophysical methods. Geochemical methods. Factors affecting geochemical subsurface interpretation. Correlation (local and regional). Main methods of correlation: lithologic correlation, paleontologic correlation and geochronologic correlation. Facies, nature of facies, facies analysis. Subsurface maps.

٣ ساعات معتمدة (٢ ساعة نظرى – ٢ ساعة عملى)

Human Rights **ع٢١٠ – حقوق الإنسان**

Identification of human rights and its international importance. Types of human rights. Human rights in Islam religion and comparative legislation. Mechanisms of human rights protection.

٢ ساعة نظرية معتمدة

Ethics of Scientific Research **ث٢١٠ – مادة ثقافية (أخلاقيات البحث العلمى)**

الأخلاق والبحث العلمى: الأخلاق والصفات الأخلاقية ، أهمية البحث العلمى ،عناصر الفلسفة الأخلاقية ، منهج البحث العلمى – معايير وضوابط السلوك الأخلاقى- الاعتبارات الأخلاقية للبحث العلمى: المبادئ الأخلاقية المصاحبة لتخطيط البحث وجمع البيانات٠٠٠٠٠ – أخلاقيات البحث العلمى فى العلوم البيولوجية والطبية – أخلاقيات البحث العلمى والتكنولوجى من المنظور الإسلامى والقانونى – قواعد السلامة والأمان فى المختبرات والتخلص الآمن من النفايات الضارة٠

٢ ساعة نظرية معتمدة

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