مقررات المستوى الثالث

١- قسم الرياضيات

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
نظرية الأعداد	٣١٨ ر	One of the applications of the concept of congruence is to investigate the Chinese Remainder Theorem. Starting by writing short notes from the basic properties and linearity of congruences related to Chinese Remainder Theorem; give a complete proof of this theorem and some solved examples.	math_3@fsc.bu.edu.eg
معادلات تفاضلية و دوال خاصة	٣١٨ ر	١.مسائل القيم الحدية و تطبيقتها في الفيزياء ٢.تحويلات لابلاس و تحويلات لابلاس العكسية و تطبيقتها في حل ٣.دوال بيسل و اهم العلاقات التكرارية لها ٤.حل المعادلات التفاضلية العادية باستخدام كثيرات الحدود ٥.متسلسلات فورير و متسلسله فورير المركبة و المزدوجة	math_3@fsc.bu.edu.eg
الحلقات والحقول	٣٢٢ ر	Write a short note on each of the following special types of rings, including the definition, an example along with proving one of its properties: 1- Commutative ring with identity which has zero divisors. 2- Integral domain 3- Skew field 4- Field 5- Euclidean ring.	math_3@fsc.bu.edu.eg

بحوث عمليات (١)	٣٢٦ ر	Research paper proposal Operations Research is the study of how to form mathematical models of complex science, engineering, industrial, and management problems and how to analyze them using mathematical techniques. It is also deals with the solution of these models; by formulate the problem as an "Optimization Problem", to optimize a function f(x) – called objective function – of some variables x's – called decision variables – subject to certain constraints that limit the possible choices values of the decision variables. The problem can be written in the most general form as Max (or min) { f(x) : x ϵ S }, where x is a vector of decision variables, f(x) is the objective function, and the set S is the set of values for the decision variables satisfying all the constraints. Following are three topics formulated as linear programming problem (1) Game Theory: The problem deals with decision-making in opposing situations where there are one or more players/opponents. In this the motive of the players are dichotomized. The success of one player tends to be at the cost of other players and hence they are in conflict. Use the following key words (Minimax solution - Saddle point – Domination – Graphical solution – Simplex method) to write an article about this topic.	math_3@fsc.bu.edu.eg
		(2) Transportation problem This is a special type of linear programming problem which deals with the allocation of the various resources to the various activities on one to one basis. It does in such a way that the cost or time involved in the process is minimum and profit or sale is maximum. Use the following key words (Basic solution, Northwest corner method, Least Cost method, Vogel method, Balanced, MODI method, degenerate case Optimal solution) to write an article about this topic.	
		(3) Assignment Problem An assignment problem is a particular case of transportation problem where the objective is to assign a number of resources to an equal number of activities so as to minimize total cost or maximize total profit of allocation. The problem of assignment arises because available resources such as men, machines etc. have varying degrees of efficiency for performing different activities, therefore, cost, profit or loss of performing the different activities is different. Use the following key words (Row-max-assignment, Column-Max-Assignment, Hungarian Method, Bottleneck, the Assignment Problem AS LP Problem) to write an article about this topic.	
		Choose one of the three topics listed above to write the article.	

ميكانيكا الكم و الميكانيكا الاحصائية	٣٣١ ر	اكتب بحثا في احد الموضوعين التاليين و بما لا يزيد عن خمس صفحات اولا) موضوع البحث "مرت نظرية الكم في تطورها بعدة مراحل تاريخيه" ... اكتب في هذا المعني علي ان يتضمن العناصر التالية: - الميكانيكا الموجية و الكلاسيكيه - شدة تيار الاحتمال - مستويات الطاقه - طريقه شرودنجر- المؤثرات و خواصها - الدوال الذاتيه المتكامله ثانيا) موضوع البحث "طرق دراسه العمليات و الظواهر الطبيعيه من خلال حركة و تفاعلات الجسيمات في انظمه الجسيمات الدقيقة" ... اكتب في هذا المعني علي ان يتضمن العناصر التالية: - تكامل الحاله- القانون العام للغازات- الطاقه الحره- الانتروبي- دوال التوزيع لجزيئات النظام- المسارات الحره- النظير الاحصائي- الجهد الثرموديناميكي- بقاء عنصر الحجم في فراغ الطور	math_3@fsc.bu.edu.eg
الأسس الرياضية لنظرية الكهرومغناطيسية والنسبية الخاصة (١)	٣٣٢ ر	اكتب في الموضوعيين الاتيين و بما لا يزيد عن خمس صفحات اولا) خواص المجالات الكهربية الساكنة للشحنات المستقرة ... علي ان يتضمن العناصر التالية: - دالة الجهد المناظرة للمجال الكهربي و مثل لذلك - القوي المحافظه - نظرية جاوس وتطبيقاتها و مثل لذلك - صيغه لحل معادلة بواسون في الاحداثيات المختلفة اكتب في الموضوعيين الاتيين و بما لا يزيد عن خمس صفحات لكل موضوع ثانيا) اسس النظرية النسبية الخاصة و فراغ فنكوفسكي ... علي ان يتضمن العناصر التالية: - تحويلات لورنتز و جاليليو - خاصية عدم التغير - ظاهرة الانكماش و التمدد - علاقات التحويل للسرعه و مركباتها و عنصر الحجم	math_3@fsc.bu.edu.eg
طرق رياضية	٣٣٤ ر	١-مسائل القيم الحدية و انواع المعادلات و طرق حلها. ٢-متسلسلات فوريير و انواعها و تطبيقاتها. ٣-تحويل فوريير و أنواعه و تطبيقاته. ٤-تحويل لابلاس و خصائصه. ٥-تحويل لابلاس العكسي و خصائصه.	math_3@fsc.bu.edu.eg
الذكاء الاصطناعي	٣٥٢ رس	uninformed search algorithms informed search algorithms genetic algorithm particle swarm optimization artificial neural network	math_3@fsc.bu.edu.eg
شبكات الحاسب	٣٥٤ رس	Ethernet network Difference between IPv4 and IPv6 All types of network topolgies Computer network devices Computer network security	math_3@fsc.bu.edu.eg
موضوعات مختارة فى علوم الحاسب (١)	٣٥٥ رس	Write a project that solves one of the following problems. 1- Bubble Sort with code and flowchart and algorithm 2- Linear Search with code and flowchart and algorithm 3- find Prime number with code and flowchart and algorithm 4- find Factorial with code and flowchart and algorithm 5- find product of two matrices with code and flowchart and algorithm The project must contain 1.Abstract and introduction 2.Mathematical illustration for solution 3. Algorithm and flowchart. 4. A code using Java language 5. Refernces	math_3@fsc.bu.edu.eg

مقدمة في الحسابات العلمية	٣٥٦ رس	Write an essay about how to solve the linear system by Gaussian elimination.	math_3@fsc.bu.edu.eg
		Write an essay about how to solve the linear system by LU decomposition method.	
		Write an essay about how to compute a matrix inverse and determinate.	
		Write an essay about how to solve Matrix Multiplication Method & Strassen's Matrix Multiplication Method.	
		Write an essay about how to solve Fixed Point And Bisection Method.	
		Write an essay about how to solve Sequential Search and Brute-Force String Matching.	

نظريات لغات البرمجة	٣٦٤ رس	Write an essay about Premier League Football table and write a program with python programming language.	math_3@fsc.bu.edu.eg
		Write an essay about how to make Simple GUI calculator using Tkinter with python programming language.	
		Write an essay about how to disucses list in python programming language.	
		Write an essay about how to disucses Dictionary in python programming language.	
معالجه الصور	٣٦٦رس	Image Filtering	math_3@fsc.bu.edu.eg
		Image Compression	
		Image Segmentation	
تطبيقات الحاسب في الاحصاء	٣٦٨ رس	تكلم عن مقاييس النزعة المركزية مع ذكر مثال	math_3@fsc.bu.edu.eg
		تكلم عن مقاييس التشتت مع ذكر مثال	
		تكلم عن توفيق الخط المستقيم مع ذكر مثال	
		تكلم عن توفيق المنحنى التربيعى مع ذكر مثال	
		تكلم عن توفيق المنحنيات الغير خطية و تحويلها الى خطية مع ذكر مثال	
		تكلم عن الارتباط بطريقة بيرسون مع ذكر مثال	
		تكلم عن الارتباط بطريقة سبيرمان مع ذكر مثال	
		انشاء مشروع بسيط يدرس العلاقة بين ظاهرتين موضحا قيمة معامل الارتباط بيرسون و توفيق خط مستقيم	
		انشاء مشروع بسيط يدرس العلاقة بين ظاهرتين موضحا قيمة معامل الارتباط بيرسون و توفيق منحنى تربيعى	
		انشاء مشروع بسيط يدرس مقارنة بين مجتمعين مختلفين مبينا ايهما اكثر تجانسا	

٢- قسم الفيزياء

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
النظرية الكهرومغناطيسية والديناميكا الكهربية	٣١٢ ف	1-Maxwell's equations for static fields.	physics _3@fsc.bu.edu.eg
		2-Maxwell 's equations for time varying fields .	
		3-Boundary conditions for Maxwell's equations.	
		4-Conservation of electromagnetic energy (poynting theorem) .	
		5-Equation of the electromagnetic potentials (lorente gauge- coulomb gauge) .	
طرق الفيزياء الرياضيه	٣١٦ ف	**In the framework of vector analysis discuss and derive the following equations in physics**	physics _3@fsc.bu.edu.eg
		1- The continuity equation (hydrodynamics and quantum mechanics.	
		2- Division equation (heat).	
		3- Wave equation (optics).	
		4- Lorentz Force law.	
		5- the Victoria model in the atomic model.	
فيزياء حيوى	٣٢٣ ف	1- Structure and functions of living cell membrane.	physics _3@fsc.bu.edu.eg
		2- Potential at the surface of the different living organs.	
		3- Mechanical properties of living materials.	
		4- Diffusion through living cell membrane.	
		5- Biopotentials (Resting and Action potentials).	
فيزياء البلازما وتطبيقاتها	٣٣٢ ف	1- Gas Breakdown: Types of electron emissions, Space Charge, Townsend coefficients, and Paschen Curves.	physics _3@fsc.bu.edu.eg
		2- Electric Probes: Single, Double, and Triple probes, Construction/Circuit, Theory, and Measurements.	
		3- Arc Discharge: I-V Regions, Configuration, Components of visual features, and Applications.	
		4- Magnetron Sputtering: Definition of Sputtering and Deposition, Construction, Sputtering Yield of materials, DC and RF sputtering, and Applications.	
		5- Plasma Coaxial Accelerators: Pulsed discharge, Construction and Circuit, Motion Phases, Conservations Laws, and Applications.	
الفيزياء النووية	٣٤٢ ف	1- The basic properties of the nucleus.	physics _3@fsc.bu.edu.eg
		2- The radioactivity, its laws and then write about natural radioactivity.	
		3- The decay of an alpha particle.	
		4- The decay of a beta particle.	
		5- The gamma-ray decay.	

الفيزياء الاشعاعية	٣٤٤ ف	1-Radiation and it’s categories 2-Radioactivity 3-Interaction of radiation with matter 4-Biological effects of radiation 5-Radiation detectors	physics _3@fsc.bu.edu.eg
حيود الاشعه وتطبيقاتها	٣٥٢ ف	(1) Production x-ray by using filament tube and gas tube. (2) Types of detection of x-ray . (3) Bragg's law for diffraction of x-ray. (4) Methods for diffraction of x-ray.	physics _3@fsc.bu.edu.eg
فيزياء الجوامد (١)	٣٥٣ ف	1. Importance of bonds in perfect solids 2. Imperfections (Defects) in crystalline materials 3. Crystal structure examination of solids 4. crystal structures in solid materials 5. Cohesion in ionic crystals	physics _3@fsc.bu.edu.eg
إنماء بلورى وخواص فيزيائية للبلورات	٣٥٤ ف	1.Write on, state the role of thermodynamic in the crystal growth mechanism. 2. Write on, state the mechanism of the electron microscope and its application in crystal growth identification and crystal defects. 3. Write on state and discuss a new experimental technique can be used to study the growth evolution of the crystal. 4. x-ray applications in medicine 5. crystal growth methods	physics _3@fsc.bu.edu.eg
الكترونيات (١)	٣٦١ ف	**(1)** (A) The difference between intrinsic and extrinsic semiconductors. (B) Fabrication of n-type and p-type semiconductors. (c) The formation of potential barrier in a pn junction. **(2)** (A) The working of a light-emitting diode (LED) and its applications. (B) The tunnel diode and the V-I characteristics of it. **(3)(A)** 1. The origin of the name transistor. 2. Symbols of npn and pnp transistor and specify the leads 3. Naming of transistor terminals. (B) Transistor action.	physics _3@fsc.bu.edu.eg
ميكانيكا الموائع	٣٨٣ ف	1-Newtonian and Non-Newtonian fluids 2-Continuity equation for different fluids (integral forms for control volumes) 3-Momentum equation for control volume 4-Differential forms for continuity equation 5-Stream function for incompressible flow	physics _3@fsc.bu.edu.eg

٣- قسم الكيمياء

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
ميكانيكا التفاعلات الكيميائية العضوية (٢)	٣١٠ ك	1- Nucleophilic substitution on saturated and unsaturated carbon 2- Electrophilic substitution on aromatic compounds 3- Elimination reactions 4- Nucleophilic addition on carbonyl compounds 5- Electrophilic addition on alkenes 6- Methods used for determining the mechanisms 7- Aromatic electrophilic substitution reactions 8- Orientation and reactivity in aromatic electrophilic substitution reactions	chemistry_3@fsc.bu.edu.eg
كيمياء عضوية طيفية (١)	٣١٢ ك	**Sample 1** Carbonyl group is an essential function group, which found in a variety of organic compounds such as amides and carboxylic acids. Write an essay on the carbonyl group in UV and IR spectroscopy. You may include how IR studies stretching frequencies of C=O based on 1) isolated and conjugated carbonyl group, 2) difference between C=O and C-O, 3) the electronic effect (inductive and mesomeric), ring size, and aromaticity. Also, you may write on 1) types of transition could happen in carbonyl compounds in UV and 2) how UV is used to calculate the absorption max of the carbonyl compounds which contain C=O in conjugation with C=C. Support your discussion with examples. **Sample 2** Hybridization plays a significant role in changing the bond properties and consequently the entire molecule. How IR talked about the effect of hybridization. You may write on how hybridization affects the stretching frequencies of bonds such as C-H and how an adjustment in hybridization is necessary in small cyclic compounds and its influence on absorption. How the hybridization affects the force constant. In addition to IR summary, you may write on how UV is commonly used to understand and calculate the absorption max of conjugated sp2 carbon in different systems such as “cisoid”. Also, how conjugation affects the gap between HOMO and LUMO. Support your discussion with examples. **Sample 3** UV and IR are spectroscopic techniques, which depend on absorption in electromagnetic radiation in order to promote the transition between discrete energy levels (quantized process). Write on the similarities and differences between IR and UV based on 1) properties of electromagnetic radiation, 2) interaction between the molecule and radiation, 3) how that affect the results and obtained information. **Sample 4** UV and IR are spectroscopic techniques, which affected using solvents. Discuss what are the various solvents which are generally used in both UV and IR techniques? How the change in polarity of the solvent affect the position of absorption? And why is methanol a good solvent for UV and for IR determination? **Sample 5** The role of hydrogen bond in UV and IR is so important. How will you detect the type of hydrogen bonding involved in a particular compound by infrared spectrum? And what its effect on wave length on UV spectrum?	chemistry_3@fsc.bu.edu.eg

chemistry_3@fsc.bu.edu.eg	1- Classification of insecticides based on natural 2- Chlorinated hydrocarbons insecticides 3- Carbamates insecticides 4- Organophosphorus insecticides 5- Insecticide synergists	٣١٣ ك	كيمياء المبيدات والسموم
chemistry_3@fsc.bu.edu.eg	1- McLeffarty rearrangement 2- Gas chromatography - mass spectrometry 3- Use of mass spectrometry in differentiation of structural isomers 4- Discuss the NMR technique in investigation of organic compounds 5- Using NMR and mass spectrometry in identification the structure of organic compounds	٣١٤ ك	كيمياء عضوية طيفية (٢)
chemistry_3@fsc.bu.edu.eg	1- Families of Monosaccharaides 2- Disaccharides and Glycosidic Bond 3- Glucose as the Backbone of Polysaccharides Stores in Animals and Plants 4- Stereochemistry in carbohydrates 5- Oxidation and reduction for carbohydrates 6- Shortening and lengthening in monosaccharide 7- Terpenoids 8- Acyclic monoterpenoid 9- Monocyclic terpenoids	٣١٦ ك	كيمياء المنتجات الطبيعية والكربوهيدرات

chemistry_3@fsc.bu.edu.eg	1- Antimetabolites as anticancer drugs (with examples) 2- Targeted anticancer drugs (with examples) 3- Mechanism of action of antiviral drugs (with examples) 4- Differences between vaccines, antiviral and antibiotic drugs (with examples) 5- Synthesis and uses of different types of antiseptics 6- Overview of different classes of antibiotics (with examples), and how these work (mechanism of action) and SAR study of penicillins 7- Classification, sources and deficiency of vitamins (with examples) 8- Antipyretic, antirheumatic and non-narcotic drugs versus natural pain relievers (with examples) and mechanism of action of antipyretics	٣١٨ ك	كيمياء الدوائية
chemistry_3@fsc.bu.edu.eg	1- Manufacture, reaction in clinker formation and chemical composition of Portland cement. 2- Mechanisms of hydration occurs when Portland cement react with water. 3- Production and the major role of nitrogen fertilizer in plants. 4- Production and the major role of phosphate fertilizer in plants. 5- Production and the major role of potassium fertilizer in plants. 6- Production and chemical properties of sodium hydroxide 7- Production and chemical properties of sulfuric acid 8- Production of copper and chemical properties of some of its compounds 9- Production of iron and chemical properties of some of its compounds 10- Production of titanium and chemical properties of some of its compounds	٣٢٢ ك	كيمياء غير عضوية (لطلاب الفيزياء)
chemistry_3@fsc.bu.edu.eg	1- Production of titanium and chemical properties of some of its compounds 2- Production of copper and chemical properties of some of its compounds 3- Production of iron and chemical properties of some of its compounds 4- Production of vanadium and chemical properties of some of its compounds 5- Production of chromium and chemical properties of some of its compounds 6- Theories of bonding in transition metal complexes - Valence bond theory - Molecular orbital theory - Crystal field theory 7- Rules applied in nomenclature of coordination compounds 8- Different types of isomerization	٣٢٣ ك	كيمياء العناصر الانتقالية والمتراكبات
chemistry_3@fsc.bu.edu.eg	1- Gold cyanidation process 2- Application of EDTA in industry 3- Application of EDTA in analytical chemistry 4- Chlorophyl as naturally occurring ligand 5- hemoglobin as naturally occurring ligand	٣٢٦ ك	كيمياء غير العضوية (٣)

chemistry_3@fsc.bu.edu.eg	1- Different types of overpotential 2- Kinetics of reversible and irreversible processes 3- Double layer structure. Theories and capacity measurements. 4- DC-polargraphy. Theories and analytical applications 5- Cathodic hydrogen evolution reaction. Principles and theories.	ك ٣٣٠	كيمياء كهربية غير انعكاسية
chemistry_3@fsc.bu.edu.eg	1- characteristics of catalyst and its types (give examples when applicable) 2- catalysis and its theories, catalytic poisoning and autocatalysis 3- classification of colloidal solutions, preparation and purification 4- general characteristics of colloidal solution 5- surface area and pore structure measurements nickel catalyst promoted with metal oxide 6- surface characteristics of supported nickel used for hydrogenation-dehydrogenation reactions 7- x-ray crystallography for identifying the crystal defect and it's macroscopic properties	ك ٣٣٢	كيمياء السطوح والحفز والغرويات والحاله الجامده
chemistry_3@fsc.bu.edu.eg	1- kinetics of complex chemical reactions 2- methods of determining the order of reaction rates 3- zero and first order reaction with examples 4- second and third order reaction with examples 5- rate, order and molecularity of reaction with examples	ك ٣٣٣	كيمياء حركية

chemistry_3@fsc.bu.edu.eg	1- The different technique of preparation for obtaining an high dispersion metal oxides	٣٣٦ ك	كيمياء تكنولوجيا الحفز
	2- The structural and preparation of zeolite catalyst and it's using in applied chemistry		
	3- From nucleation and growth, structural and chemical promotion state the relation between thhe surface area and specific catalytic activity		
	4- By using isomorphism and spinel structure identify the different types of pore		
	5- From the different shape of pore structure and the active components, how can you obtain a single phase catalyst		
chemistry_3@fsc.bu.edu.eg	1- Classification of adsorption isotherms	٣٣٨ ك	كيمياء السطوح والحفز والغرويات شعبة الكيمياء
	2- Langmuir, Freundlich and BET adsorption isotherms		
	3- Structure of catalysts		
	4- Catalyst components		
	5-Ammonia synthesis		
	6- prepartion of colloid		
	7- properties of colloids		
chemistry_3@fsc.bu.edu.eg	1- characteristics of catalyst and its types (give examples when applicable)	٣٣٨ ك	كيمياء السطوح والحفز والغرويات شعبة الميكرو والكيمياء والشعب المزدوجه
	2- catalysis and its theories, catalytic poisoning and autocatalysis		
	3- classification of colloidal solutions, preparation and purification		
	4- general characteristics of colloidal solution		
	5- surface area and pore structure measurements nickel catalyst promoted with metal oxide		
	6- surface characteristics of supported nickel used for hydrogenation-dehydrogenation reactions		

chemistry_3@fsc.bu.edu.eg	1- Application of preconcentration technique for the estimation of inorganic pollutants in foods and water.	٣٤٢ ك	كيمياء تحليلية ٣٤٢ ك شعبة الكيمياء مج (١ ، ٢)
	2- Extractive Spectrophotometric methods based on ion-pair complex formation for the estimation of drugs in their pharmaceutical preparations		
	3- Solvent extraction of different metal ions using different chelating agents		
	4- Solid-phase extraction of different metal ions using zeolites		
	5- Solid-phase extraction of different metal ions using composites		
	6- Comparison between Gas chromatography (GC) and High-performance		
	7- liquid chromatography (HPLC). Structure, theory and applications		
	8- Detectors used in HPLC (structure, advantages and disadvantages).		
	9- Detectors used in GC (structure, advantages and disadvantages).		
	10- Comparison between paper chromatography and Thin-layer chromatography.		
	11- Applications of chromatographic techniques in different fields (health, environment, industry, ……etc.).		
chemistry_3@fsc.bu.edu.eg	1- Factors influencing to increase percent extracted in organic phase.	٣٤٢ ك	كيمياء تحليلية ٣٤٢ ك شعبة الميكرو والكيمياء
	2- Principles of solvent extraction for metal chelates		
	3- Factors affects on extraction of metal chelates		
	4- Spectrophotometric applications based on metal chelates formation for estimation of drugs in their pharmaceutical preparation		
	5- Application of liquid _ liquid extraction according to increase fraction extracted with small volumes by successive extraction technique.		
	6- Different Classifications of chromatography		
	7- High purified liquid chromatography (HPLC)		
chemistry_3@fsc.bu.edu.eg	1- Distribution coefficient KHA, distribution ratio D, and percent extracted of the organic reagent.	٣٤٢ ك	كيمياء تحليلية ٣٤٢ ك الشعب المزدوجه ماعدا الميكرو وكيمياء)
	2- Theory of solvent extraction of metals and metal chelates		
	3- An analytical application of solvent extraction of metal chelates formation for estimation of drugs in their pharmaceutical preparation		
	4- Separation efficiency of metal chelates, and factors affects on extraction of metal chelates.		
	5- Application of liquid- liquid extraction with no secondary reaction according to increase fraction extracted with small volumes by successive extraction technique		
	6- Classifications of chromatography		
	7- High purified liquid chromotography (HPLC)		
chemistry_3@fsc.bu.edu.eg	1- Environmental Impact of radioactivity	٣٥٠ ك	كيمياء نووية واشعاعية
	2- Applications of radioisotopes		
	3- The area of nuclear chemistry		
	4- Several types of interactions occur when target material is bombarded with nuclear particles and the most common of nuclear reactions		
	5- Effect radioisotopes on medicine and agriculture		

٤- قسم الجيولوجيا

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
مقررات خاصة في الجيولوجيا	٣٠٥ ج	1- Non-stratabound gold deposits with example in the Eastern Desert of Egypt. 2- Stratabound gold deposits with example in the Eastern Desert of Egypt.	geology_3@fsc.bu.edu.eg
جيولوجيا البحار وتغيرات ما بعد الترسيب	٣٢٠ ج	١- اكتب في أنواع الشواطئ مبينا بالرسم 2- Diagenesis of sandstone 3- Diagenesis of limestone	geology_3@fsc.bu.edu.eg
صخور رسوبية وبيئات ترسيب	٣٢٥ ج	1. Sandstone (mineralogy, classification and depositional environment) 2. Limestone (mineralogy, components, classification and depositional environment)	geology_3@fsc.bu.edu.eg
جيوكيمياء الصخور النارية والمتحولة	٣٣٤ ج	1. Structure and physical properties of silicate melt. 2. How magmas form in the earth (chemical & mineralogical classification of magmas). 3. Magmatic series and general characteristics of trace and rare-earth elements. 4. Different types of basalts (petrography and their major and trace element chemistry). 5. Granitoids (their mineralogy, geochemistry and occurrence).	geology_3@fsc.bu.edu.eg

صخور الركيزة المصرية المعقدة	٣٣٦ ج	1. Classification, general characteristics and occurrences of Gneisses and Migmatitesin Egypt. 2. Different gabbroic types and their textures in Egyptian Eastern Desert. 3. The ophiolitic sequence of Wadi Ghadir. 4. Classification of the Egyptian Ring complexes (Give Abu Khruq as an example) 5. The general characteristics of metavolcanic rocks and their textures in the Egyptian Eastern Desert. 6. General characteristics of the different granitic rock and their textures in the Egyptian Eastern Desert.	geology_3@fsc.bu.edu.eg
ميكانيكا الصخور والجيولوجيا التركيبية	٣٤٠ ج	1- Primary Sedimentary Structures 2- Salt domes 3- Gravity-controlled Structures 4- Impact Structures 5- Classifications of folds 6- Field criteria of faulting 7- Foliations and Lineations 8- Primary structures in sedimentary and igneous rocks with explaining the resolution of force into principle stresses and mechanics of plastic deformation in rocks. 9- Folds with explaining factors controlling behavior of deformation in rocks. 10- Faults and different types of foliations.	geology_3@fsc.bu.edu.eg
علم سيزمية الزلازل والإستكشاف السيزمي	٣٥٠ ج	الموضوع الأول: تحديد مكان بؤرة الزلزال Determination the location of Earthquake epicenter الموضوع الثاني: الزلازل المدمرة في مصر Destructive Earthquakes in Egypt الموضوع الثالث: دراسات مخاطر الزلازل في مصر Seismic hazard studies in Egypt الموضوع الرابع: أهمية هندسة الزلازل The importance of earthquake engineering الموضوع الخامس: تأثيرات الزلازل علي المياه الجوفية Groundwater Effects from Earthquakes	geology_3@fsc.bu.edu.eg

geology_3@fsc.bu.edu.eg	1. Porosity logs 2. Lithology logs 3. Radioactivity logs 4. Electrical logs 5. Mud fluids and mud log 6. Core analysis 7. Petrophysics and formation evaluation 8- The application of audio-frequency magneto-tellurics (AMT) to mineral exploration. 9- The application of gravity and magnetic methods to mineral exploration. 10- The application of seismic refraction methods in ground water modeling studies. 11- The self- potential method in geothermal exploration (Mining Geophysics). 12- Using Radiometrics as geophysical methods used in mineral exploration.	٣٥٥ ج	تسجيلات أبار وجيوفيزياء التعدين
geology_3@fsc.bu.edu.eg	1- Geoelectrical Investigation of Ground Water Resources, Egypt. 2- A review of seawater intrusion in the Nile Delta ground water system by using geoelectrical methods 3- Application of geoelectrical method in archaeology for mapping out the areal extent of remnants of buried foundations of ancient buildings 4- Using the self-potential (SP) method in geothermal exploration. 5- Using geoelectric method in engineering surveys to locate sub-surface cavities, faults and fissures, permafrost, mineshafts.	٣٥٨ ج	استكشاف كهربي وطرق كهرومغناطيسية

٥- قسم النبات

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
وراثه جزيئية	٣١٠ ن	1- DNA replication process.	botany_3@fsc.bu.edu.eg
مناعة	٣١٨ ن	1- Non-specific (innate or natural) resistance.	botany_3@fsc.bu.edu.eg
		2- Specific (acquired or adaptive)resistance.	
		3- Intact skin as anatomical Barriers.	
		4- The mucous membranes as anatomical Barriers.	
		5- Mechanical removal in Non-specific Immunity.	
		6- Chemical and biochemical Barriers in Nonspecific Immunity.	
		7- Physiological Factors in Non-specific Immunity.	
		8- Inflammation and immunity.	
		9- Host Factors affecting Innate Immunity.	
		10- Professional phagocyte cells.	
		11- Polymorphoneuclear leukoctes PMNs.	
		12- Monocytes and macrophages cells.	
		13- Eosinophils and Basophils cells.	
		14- Mast cells and Natural killer cells.	
		15- Phagocytosis.	
		16- T lymphocytes.	
		17- B lymphocytes.	
		18- The lymphatic system.	
		19- Antigen and Immunogenicity.	
		20- Properties of immunogenicity.	
		21- Special Types of antigens.	
		22- Antibodies (immunoglobulin).	
		23- Immunoglubulins types and classes (isotypes).	
		24- Cytokine.	
		25- Cell-mediated immunity.	
		26- Tumor Necrosis Factor.	

botany_3@fsc.bu.edu.eg	1- Overview of microbial metabolism 2- Carbohydrate catabolism(Aerobic respiration) 3- Anaerobic respiration and fermentation of carbohydrate 4- Protein and Amino acid catabolism 5- Lipid catabolism 6- Photosynthesis 7- Chemosynthesis 8- Biosynthesis of amino acid and lipid	٣٩٢ ن	ايض ميكروبى
botany_3@fsc.bu.edu.eg	1-Medical application of industrial microbiology. 2- Food industry application of industrial microbiology. 3- Agriculture application in industrial microbiology. 4- Chemical application of industrial microbiology. 5- Production of single cell protein by microorganisms in industrial 6- Production of bioethanol by yeasts in industrial microbiology. 7- Application of bioethanol in industrial microlbiology. 8- The importance of cortisone in medical application. 9- The importance of adrenal cortical steroids in medical application. 10- Production of penicillin by microorganisms in industry. 11- Production of streptomycin by microorganisms in industry. 12- Production of gramicidin by microorganimsms in industry. 13- Production of dextran by microorganisms in industry. 14- Production of citric acid by microorganisms in industry. 15- Production of fumaric acid by microorganisms in industry. 16- Production of vitamin A by microorganisms in industrial. 17- Production of vitamin B12 (cobamide) by microorganisms in industry. 18- Production of amylase enzyme by fungi in industry. 19- Producton of amylase enzyme by bacteria in industry. 20- Gonadal hormones in industrial microbiology.	٣٩٦ ن	ميكروبيولوجيا صناعية
botany_3@fsc.bu.edu.eg	1- The host- parasite interaction. 2- Entry into the plant and host barriers. 3- Penetration by viruses. 4- Penetration by bacteria. 5- Penetration by fungi. 6- Necrotrophic associations. 7- Biotrophic associations. 8- Spread of the pathogen in the host. 9- Downy and powdery mildews, rot, tumer and wilt diseases. 10- Pathotoxins and phytotoxins. 11- Defense of the host and defense mechanisms. 12- Biocontrol of plant diseases.	٣٦٦ ن	علاقة العائل بالطفيل

٦- قسم علم الحيوان

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
بيولوجيا الخلية	٣١٢ ح	1—Nucleolus Nucleus components 2- Cell cycle 3-cell division 4-Apoptosis 5-Cell membrane	zoology_3@fsc.bu.edu.eg
وظائف أعضاء (٢)	٣١٤ ح	1- Renal transport systems. 2- Absorption and transport of nutrients in small intestine. 3- Methods of transport through cell membrane 4- Structure of mitochondria and its transport systems 5- Structure of the nuclear envelope and nucleocytoplasmic transport	zoology_3@fsc.bu.edu.eg
علم السموم والتلوث	٣١٦ ح	(1) Biotransformation of toxic and pharmacodynamic drug interaction (2) Absorption of toxicants and selective toxicity on organs (3) Elimination of toxicant from the body (4) Effect of pollution with gases on aquatic fresh water organisms (5) Effect of pollution with metals on aquatic fresh water organisms	zoology_3@fsc.bu.edu.eg
كيمياء حيوية (١)	٣٠٣ ح	1-Classification and structure of carbohydrates. 2-Major pathway of glucose oxidation 3-Biosynthesis of cholesterol. 4-The 3D structure of protein. 5-The physical and chemical properties of amino acids.	zoology_3@fsc.bu.edu.eg
كيمياء حيوية (٢)	٣٠٢ ح	1- protein purification is very important target for biochemists. Write on the importance and techniques used 2-Write on the physical and chemical properties of DNA 3- oxidation of fatty acids and it's biological significance 4- Gluconeogenesis and pentose phosphate pathway 5- Importance, structure and metabolism of glycogen	zoology_3@fsc.bu.edu.eg
تقنية مجهرية	٣١٥ ح	1-The microscope parts and types specification. 2-Fixation process, types of fixatives and factor affecting on fixation. 3- Clearing, embedding and staining. 4- Types of staining and methods of stains for Glycogen and Toluidine blue 5- Microtome and Knives and tools used in dissecting animal	zoology_3@fsc.bu.edu.eg

٧- قسم علم الحشرات

اسم المقرر	كود المقرر	النقاط البحثية	عنوان الايميل الذى سوف يتم ارسال البحث علية
علم المبيدات	٣٣٤ ش	1) Write an essay about the classification of pesticides. 2) Write an essay about the historical background of pesticides and inorganic insects. 3) Write an essay about organochlorine insecticides. 4) Write an essay about the organophosphorous insecticides 5) Write an essay about the insecticides types and their risks and benefits.	Entomology_3@fsc.bu.edu.eg
حشرات مائية	٣٤٣ ش	1) Adaptation of some insects of order Diptera to live in aquatic habitat. 2) Adaptation of order Ephemeroptera to live in aquatic habitat. 3) Adaptation of order Odonata to live in aquatic habitat. 4) Adaptation of some insects of order Coleoptera to live in aquatic habitat	Entomology_3@fsc.bu.edu.eg
افات النبات ونقل الامراض	٣٨٢ ش	1) Insects causing chewing damage to plant. 2) Insects causing sucking damage to plant. 3) Insects transmitted persistent virus to plant. 4) Insects transmitted non-and semi-persistent virus to plant. 5) Insects as a vector of nematode and fungi.	Entomology_3@fsc.bu.edu.eg
باثولوجيا الحشرات والمناعة	٣٩٦ ش	1) Viruses 2) Bacteria 3) Fungi 4) protozoa 5) Nematodes 6) Preliminary identification (external symptoms) of insects infected by pathogens	Entomology_3@fsc.bu.edu.eg