Mansoura University

Programme Handbook
(B.Sc. Statistics & Computer science)

Offered by

Mathematics Department

Faculty of Science

Mansoura University

2012 / 2013

Contents

Welcome

I would like to extend a very warm welcome to you as a student or visitor on a degree program in Mathematics or in Statistics & Computer Science at the Faculty of Science, Mansoura University. I would like to welcome you all to our department, on behalf of all the staff in the department. We hope that you will be happy and successful in your study.

The Mathematics Department is located at the third floor in the new building at the Faculty of Science. You will find us to be friendly department, and you should soon find your way and get to know with us. In addition to the material contained in this booklet, you can find a lot of additional information, including detailed syllabuses of programs, starting from

http://www.mans.edu.eg and linking to undergraduate courses.

The university education requires a greater degree of independent study than most of you will have experienced before. We struggle to provide high quality teaching, but we cannot possibly be effective without your full participation.

Once again, welcome to our department of mathematics. I look forward to meeting you when you are admitted to the Department of Mathematics.

Head of the Department

Professor M. E. Fares

I. Preface

The Mathematics Department was established in the year 1969 as one of six departments of Faculty of Science under the supervision of Cairo University. In 1973, Mansoura University was founded and the department started to develop to take place with all development in Mathematical education.

The Department of Mathematics offers programs of study leading to the Master of Science (MSc) and Doctor of Philosophy (PhD) degrees. The department is strongly committed to graduate education and supports it by maintaining a strong and diverse research programs.

A basic goal of the program of graduate education is to prepare students for careers in research and related fields. It is intended that graduates will have the education and training necessary to enable them to make fundamental contributions to knowledge in Mathematics or their chosen field. Further, it is anticipated that they will be peers with the next generation of technology leaders in industry and academia.

The department offers two undergraduate programs:

1 B Sc in Mathematics as Mathematics major,

2 B Sc in Statistics and Computer Science as double major.

Fields of Research and Research Groups:

The department has about 64 faculty members performing research in most area of the major fields of mathematics, such as:

- *Applied Mathematics*
- *Theoretical mechanics*
- *Group of Abstract Algebra*
- *Group of Complex Analysis*
- *Group of Probability and Statistics*
- *Group of Topology*
- *Group of Numerical Analysis*
- *Group of Differential Geometry*
- *Chaos and dynamical systems*
- *Biomathematics and Mathematical modeling*

Although there is no a well known ranking scheme for the mathematics Departments in our country, one can easily and safely recognize the mathematics department in Mansoura University among the top of mathematics departments in Egypt. What can support this concluding remark is the number of award obtained by the staff members since it is founded in 1969 as well as the annual publications of the Department members. Besides the yearly appointment for the best students to be the future members of the department after finishing their PhD programs, the department offers research and teaching assistantships. Our graduates always find positions somewhere in the academic institutes and in education which reflects the good repetition the department has.

The department also offers three Master programs as:

1 Pure mathematics program,

2 Applied mathematics program, and

3 Statistics and Computer Science Program

The MSc program consists of two main parts. An MSc year preparatory during which the candidate has to successfully pass exams in some courses depending on their major field. S/He has to write dawn an MSc thesis. Most of the candidates are required to lead tutorials for undergraduate students while they perform their program.

PhD degree requirements

In order to be admitted for a PhD program, students are required to have Msc degree. Before a student can be admitted to candidacy for the PhD degree, s/he has to write dawn a thesis and successfully pass the defense examination. Publication in a recognized journal is highly recommended before t.

II. Vision and Mission

Our vision is that of a department being recognized nationally and internationally for its excellence in research and teaching. Our mission is to produce significant research, to provide high quality undergraduate, graduate and professional programs of study which attract the best students, and to attend to the mathematical needs of the university and the community. Our vision and mission derive their strength from a friendly and interesting environment.

III. Aims of the Mathematics Department

The aims of the department of mathematics in the faculty of science, Mansoura University is built upon the mission statement of the University "to advance learning and knowledge by teaching and research in Mathematical Sciences, Mathematical Statistics, and Theoretical Computer Sciences, particularly in science and technology". Our strategic objective aims to:

provide excellent undergraduate and graduate mathematics education to both science and non-science students that will enable them to make significant contributions to the advancement of the country;

- develop a culture of research and professionalism that will contribute to the country's progress as well as to the personal growth and development of the members of the department;
- develop outstanding mathematicians, mathematics educators, and mathematics professionals who will become leaders in shaping the country's future;
- strengthen collaboration between mathematics education as well as with other disciplines;
- encourage and advance links with business and industry;
- develop a positive attitude to mathematics, including confidence, enjoyment and perseverance;
- grow confidence in the use of number, algebra, shape, space ,measures ,modeling, data handling and probability:
- increase the ability to solve problems, present solutions, and interpret results;
- increase the ability to think and communicate mathematically- precisely, logically and creatively;
- help all students to achieve their mathematical potential;

جامعة : المنصورة
كليـــة : العلـــــوم
قســـم : الرياضيات

توصيف برنامج دراسي
(عام ٢٠١١/٢٠١٢)

أ - معلومات أساسية :

١ - اسم البرنامـــج :الرياضيات

٢ - طبيعة البرنامج :(أحادى)

القسم المسئول عن البرنامج : الرياضيات

تاريخ إقرار البرنامج : ٦ / ٩ / ٢٠١٠

ب – معلومات متخصصة :

١ - الأهداف العامة للبرنامج :

The program aims to

1. provide students with a broad spectrum of the basic concepts and theories in basic sciences.
2. provide students with the knowledge and necessary skills as well as the needed techniques to develop mathematical, statistical and computer science capabilities.
3. develop mathematical approaches that meet the community needs like economical, environmental, social, ethical and safety requirements.
4. provide students with mathematical abilities in formulating, analyzing, interpreting and classifying data in different mathematical disciplines.
5. Enable students to communicate effectively in different ways.
6. Improve students' self and life-long learning skills.

٢ –المخرجات التعليمية المستهدفة من البرنامج :

١/٢ المعرفة و الفهم :

By the end of this programme, graduates will be able to:

a1. -Define basic facts, concepts and principles of basic sciences.
a2. -Be familiar with methods and techniques of basic sciences.
a3. -Demonstrate understanding of mathematics-relevant theories and their applications.
a4. -Recognize the processes and mechanisms supporting the structure and function of the mathematical topics.
a5. -Explain mathematical terminology, nomenclature and classification systems.
a6. -Recognize theories and methods applied for interpreting and analyzing data related to mathematics.
a7. -Be aware of the recent development of the mathematics-related knowledge.
a8. -Identify the relation between the mathematical topics and the environment.
a9. -Be familiar with numerical methods, and the different ways in which numerical information is used.
a10.- Recognize the basics of group theory and their roles in dealing with symbols.
a11. -Deal with rings and fields structures and their roles in solving problems.
a12.- Be aware of mathematical methods and techniques that deal with differential equations and their applications.
a13.- Be familiar with techniques and methods of solving ordinay differential equations and their

applications.

a14.- Acquire knowledge and understanding on geometrical concepts, and processes used in measuring attributes of objects.

a15.- Identify the concept of calculus and its role in mathematical analysis.

a16.- Recognize discrete mathematics, algorithms, and combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.

a17.- Be aware of the role of probability and statistical models in concluding inferences about real-world situations.

a18.- Be familiar with modeling and symbolic representations of problem situations.

a19.- Acquire an understanding on the deductive nature of mathematics, and the roles of definitions, axioms, and theorems to identify and construct valid deductive arguments.

a20.- Explain theories and applications of other mathematical, statistical and computer science trends.

a21.- Acquire knowledge and understanding of methods and techniques of applied mathematics and efficient applications in related fields.

a22.- Acquire knowledge and understanding of principles of computer sciences and programming languages.

٢/٢ القدرات الذهنية :

By the end of this programme, graduates will be able to:

b1 -Differentiate between mathematical theories and assess their concepts and principles.

b2 -Analyze, assess and interpret qualitatively and quantitatively relevant data.

b3 -Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.

b4 -Postulate and deduce mechanisms and procedures to handle scientific problems.

b5 -Construct several related and integrated information to confirm, make evidence and test hypotheses.

b6 -Formulate mathematical ideas and procedures using appropriate mathematical vocabulary and notation.

b7 -Construct symbolic forms of problem situations through modeling real-world situations, develop and use the models to make predictions and informed decisions.

b8 -compare between different mathematical objects.

b9 -Represent, abstract and interpret mathematical problems.

b10 -Develop connections within branches of mathematics and between mathematics and other disciplines.

b11 -Utilize appropriate processes in applied mathematical studies.

b12 -Demonstrate skill in mathematical reasoning, manipulation and calculation.

٣/٢ المهارات :

١/٣/٢- مهارات مهنية وعملية :

By the end of this programme, graduates will be able to:

c1- Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance.

c2- Apply techniques and tools considering scientific ethics.

c3- Solve problems using a range of formats and approaches.

c4- Identify and criticize the different methods used in addressing subject related issues.

c5- formulate methods of solution for a variety of mathematical problems and provide a theoretical

justification for the methods
c6- Develop conjectures and draw appropriate conclusions, and test these conjectures.
c7- Use technology to enhance mathematical thinking and understanding.
c8- Conduct independent nontrivial exploration in mathematics.
c9- apply numerical methods to the solution of mathematical problems, demonstrate an awareness of their advantages and limitations and of the practical issues involved in their implementation.
c10- construct, and critically assess, mathematical models for real-world problems.
c11- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem.
c12- program a range of mathematical and statistical applications.

٢/٣/٢- مهارات عامة :

By the end of this programme, graduates will be able to:

d1-Think independently, set tasks and solve problems on scientific bases.
d2- Acquire numeracy and computational skills.
d3- Deal with scientific patents considering property right.
d4- Use information and communication technology effectively.
d5- Acquire self-and life-long learning.
d6- Acquire human rights, civilian behavior with others, knowing his duties and rights.
d7- Acquire ethical behavior in scientific career.
d8- Manage time, collaborate and communicate effectively with a wide range of individuals using a variety of means.
d9- Exhibit the sense of beauty and neatness.
d10- Apply scientific models, systems, and tools effectively.

٣- المعايير الأكاديمية للبرنامج : تم تبني المعايير الأكاديمية القياسية للهيئة القومية لجودة التعليم والإعتماد

3- National academic reference standards (NARS) for Mathematics:

a. Knowledge and understanding **١/٢ المعرفة و الفهم :**

By the end of this programme, graduates must acquire knowledge and understanding of:

1. The related basic scientific facts, concepts, principles and techniques.
2. The relevant theories and their applications.
3. The processes and mechanisms supporting the structure and function of the specific topics.
4. The related terminology, nomenclature and classification systems.
5. The theories and methods applied for interpreting and analyzing data related to discipline.
6. The developmental progress of the program- related knowledge.
7. The relation between the studied topics and the environment.
8. Numerical mathematics, and the different ways in which numerical information is used.
9. Abstract algebraic structures and their roles in solving problems expressed with symbols and in developing mathematical theories and techniques.
10. Mathematical methods and techniques that deal with differential equations and their applications.
11. Geometrical concepts, and processes used in measuring attributes of objects.
12. The concept of function, and its role in mathematical analysis.
13. Discrete mathematics, algorithms, and combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.
14. Probability and statistical models to make inferences about real-world situations.
15. Modeling and symbolic representations of problem situations.
16. The deductive nature of mathematics, and the roles of definitions, axioms, and theorems to

identify and construct valid deductive arguments.
17. Theories and applications of other mathematical trends and/or applied mathematics and/or mathematical statistical and/or computer science.

b. Intellectual skills **٢/٢ القدرات الذهنية :**

By the end of this programme, graduates must be able to:

1. Differentiate between subject-related theories and assess their concepts and principles.
2. Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant data.
3. Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.
4. Postulate and deduce mechanisms and procedures to handle scientific problems.
5. Construct several related and integrated information to confirm, make evidence and test hypotheses.
6. Formulate mathematical ideas and procedures using appropriate mathematical vocabulary and notation.
7. Construct symbolic forms of problem situations through modeling real-world situations, develop and use the models to make predictions and informed decisions.
8. Recognize, compare, and transform mathematical objects.
9. Represent, abstract and interpret problems.
10. Develop connections within branches of mathematics and between mathematics and other disciplines.
11. Utilize appropriate processes in applied mathematical studies.
12. Judge the validity of mathematical arguments and the reasonableness of results.

٣/٢ المهارات :

c. Practical and Professional skills **١/٣/٢ - مهارات مهنية وعملية :**

By the end of this programme, graduates must be able to:

1. Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance.
2. Apply techniques and tools considering scientific ethics.
3. Solve problems using a range of formats and approaches.
4. Identify and criticize the different methods used in addressing subject related issues.
5. Apply reasoning techniques to build convincing mathematical arguments.
6. Develop conjectures and draw appropriate conclusions, and test these conjectures.
7. Identify required mathematics and other technical information independently.
8. Use technology to enhance mathematical thinking and understanding.
9. Conduct independent nontrivial exploration in mathematics.
10. Develop and reinforce tenacity and confidence in their abilities to use mathematics

d. General and Transferable Skills **٢/٣/٢ - مهارات عامة :**

By the end of this programme, graduates must be able to:

d1. Use information and communication technology effectively.
d2. Identify roles and responsibilities, and their performing manner.
d3. Think independently, set tasks and solve problems on scientific basis.
d4. Work in groups effectively; manage time, collaborate and communicate with others positively.
d5. Consider community linked problems, ethics and traditions.
d6. Acquire self- and life-long learning.

d7. Apply scientific models, systems, and tools effectively.
d8. Deal with scientific patents considering property right.
d9. Exhibit the sense of beauty and neatness.

٤ـ العلامات المرجعية : تم الإكتفاء بالمعايير الأكاديمية القومية القياسية NARS

٥ ـهيكل و مكونات البرنامج :

أـ مدة البرنامج : أربع سنوات

ب ـهيكل البرنامج : ١٤٦ ساعة معتمدة

نظري	عملي / تدريب		إجمالي	
١١٠	٩٨		٢٠٨	

إلزامي	١٢٩ساعة معتمدة
إنتقائي	٢ ساعة معتمدة
اختياري	١٥ ساعة معتمدة

نوع المقررات	عدد الساعات المعتمدة	النسبة المئوية %
□ مقررات العلوم الأساسية :	٣٠	٢٠.٥
□ مقررات العلوم الاجتماعية و الإنسانية :	٢	١.٤
□ مقررات علوم التخصص :	١٠٨	٧٤
□ مقررات من علوم أخرى (حاسب آلي و ..):	٦	٤.١
إجمالي	١٤٦	١٠٠

التدريب الميداني : يؤدى كافة طلاب الكلية بعد إجتيازهم بنجاح ٧٢ ساعة معتمدة تدريبات تطبيقية لمدة ٨ أسابيع فى شركات أو مصانع أو هيئات ذات صلة بالتخصص أو أحد المراكز أو الأقسام العلمية بالجامعة، وذلك بدون إحتساب ساعات معتمدة

ج- مستويات البرنامج (في نظام الساعات المعتمدة) : ٤ مستويات

المستوى الأول / السنة الأولى : يلزم اجتياز ٢٢ ساعة معتمدة من ٣٨ ساعة معتمدة موزعة كالتالي :

إلزامي ٢٠ انتقائي ٢ اختياري ٠

المستوى الثاني / السنة الثانية : يلزم اجتياز ٤٢ ساعة معتمدة ٧٤ ساعة معتمدة موزعة كالتالي :

إلزامي ٣٤ انتقائي ٢ اختياري ٦

المستوى الثالث / السنة الثالثة : يلزم اجتياز ٦٦ ساعة معتمدة ١١٠ ساعة معتمدة موزعة كالتالي :

إلزامي ٥٣ انتقائي ٢ اختياري ١٠

المستوى الرابع / السنة الرابعة : يلزم اجتياز ساعة معتمدة ١٤٦ ساعة معتمدة موزعة كالتالي :

إلزامي ١٢٩ انتقائي ٢ اختياري ١٥

د . مقررات البرنامج :

أ- إلزامي :

المستوى	الفصل الدراسي	عدد الساعات الأسبوعية			عدد الوحدات	اسم المقرر	كود أو رقم المقرر
		عملي	تمارين	نظري			
الأول	الأول	-	2	2	3	جبر وهندسة	Math 111
		-	2	2	3	ميكانيكا (١)	Math 121
		2	1	2	3	فيزياء حرارية + خواص مادة	Phys 101
		2	1	2	3	كهربية ومغناطيسية + ضوء	Phys 102
		2	1	2	3	أسس الكيمياء غير عضوية	Chem121
		1	-	2	2	علم الحاسب (١)	Gen 101
		-	-	2	2	حقوق الإنسان	Gen 103
	الثانى	-	2	2	3	تفاضل وتكامل	Math 112
		-	2	2	3	ميكانيكا (٢)	Math 122
		2	1	2	3	دوائر كهربية	Phys 103
		2	1	2	3	نظرية الكهرومغناطيسية	Phys 104
		2	1	2	3	أسس الكيمياء الفيزيائية	Chem 141
		-	-	2	2	لغة انجليزية	Gen 104
الثانى	الثالث	-	2	2	3	جبر مجرد(١)	Math 212
		-	2	2	3	معادلات تفاضلية	Math 214
		-	2	2	3	تفاضل عالى	Math 216
		-	2	2	3	ميكانيكا (٣)	Math 221
		2	-	2	3	علم الحاسب	Math 241
	الرابع	-	2	2	3	تحليل حقيقى	Math 211
		-	2	2	3	جبر خطى (١)	Math 215
		-	2	2	3	هندسة تحليلية فراغية	Math 218
		-	2	2	3	ميكانيكا (٤)	Math 223
		-	2	2	3	مقدمة فى الإحصاء والاحتمالات	Math 231
الثالث	الخامس	-	2	2	3	نظرية القياس	Math 311
		2	-	2	3	تحليل عددى (١)	Math 313
		-	1	2	2	نظرية الاحتمالات (١)	Math 331
		-	2	2	3	نظرية إحصائية (١)	Math 333
		2	-	2	3	برمجة هيكلية	Math 341
		2	-	2	2	نظم قواعد البيانات	Math 342

المستوى	الفصل الدراسي	عدد الساعات الأسبوعية			عدد الوحدات	اسم المقرر	كود أو رقم المقرر
		عملي	تمارين	نظري			
الثالث	السادس	-	1	2	2	نظرية المنطق الرياضى	Math 340
		-	1	2	3	الدوال والدوال الخاصة	Math 324
		-	1	2	2	معادلات تكاملية	Math 318
		-	2	2	3	تحليل الانحدار	Math 334
		2	-	2	2	أنظمة جبر الحاسب	Math 343
		2	-	2	3	ذكاء اصطناعى ونظم خبيرة	Math 344
الرابع	السابع	2	-	2	3	تحليل عددى (٢)	Math 413
		-	1	2	2	نظرية الشبكات	Math 418
		-	2	2	3	بحوث عمليات	Math 421
		-	1	2	2	نظرية إحصائية (٢)	Math 431
		1	-	2	2	هياكل بيانات	Math 441
		1	-	2	2	شبكات عصبية	Math 442
		-	-	1	1	مشروع البحث والمقال	Math 400
	الثامن	-	2	2	3	تحليل دالى	Math 414
		-	1	2	2	نمذجة ومحاكاة	Math 426
		-	1	2	2	تحليل تبيان	Math 434
		-	1	2	2	سلاسل زمنية وتنبؤ	Math 435
		1	-	2	2	نظم الرسم بالحاسب	Math 443
		2	-	2	3	تصميم وتحليل الخوارزميات	Math 444
		-	1	2	2	نظرية الأشكال	Math 412
		-	-	1	1	مشروع البحث والمقال	Math 400

ب – انتقائي :

المستوى	الفصل الدراسي	عدد الساعات الأسبوعية			عدد الوحدات	اسم المقرر	كود أو رقم المقرر
		عملي	تمارين	نظري			
الأول	الثاني	-	-	2	2	مواد ثقافية	Gen 104 - Gen 111 selection of one course

ج – اختياري :

المستوى	الفصل الدراسي	عدد الساعات الأسبوعية			عدد الوحدات	اسم المقرر	كود أو رقم المقرر
		عملي	تمارين	نظري			
الثانية	الأول	-	2	2	3	مقدمة فى المنطق	Math217 or Math228
		-	2	2	3	معادلات فرقية ١	
	الثاني	2	-	2	3	جبر حاسب	Math242 or Math224
		-	2	2	3	الرياضيات الحيوية	
الثالثة	الأول	1	-	2	2	مواضيع مختارة فى الحاسب ١	Math347 or Math328
		-	1	2	2	معادلا فرقية (٢)	
	الثاني	2	-	2	3	نظم تشغيل	Math345 or Math319
		-	2	2	3	نظرية الأعداد	
الرابعة	الأول	-	1	2	2	عمليات عشوائية (١)	Math432 or Math411
		-	1	2	2	نظرية المعادلات التفاضلية	
	الثاني	-	1	2	2	نظرية الموثوقية	Math436 or Math445
		1	-	2	2	معالجة الصور	

٥ـ محتويات المقررات :

كود أو رقم المقرر	اسم المقرر	محتوى المقرر
Math 111	Fundamental Math (1) Algebra and Geometry	**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. **Geometry:** –Coordinate plane: rectangular coordinates and polar coordinate, change of axes, distance . – 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
Math 121	Mechanics (1)	–Vector Algebra. –Reduction of forces. Equivalence of sets of Forces. –Equilibrium of Frames, Smooth hinges. –The center of mass. –Line integral. The work and energy. –The virtual work principle.
Phys 101	General Physics (1) (Thermal Physics and Properties of Matter)	–Thermal physics: Zeroth law of thermodynamics –Thermal expansion of solids and liquids –Heat and thermal energy –Heat capacity and specific heat, latent heat –Thermodynamic process –Liquification of gasses –Properties of matter: Units and Dimensions –Oscillatory Motion –Rotational Dynamics –Earth Satellites –Fluids, Surface Tension –Elasticity, Solve problem and revision
Phys 102	General Physics (2) (Electricity and Magnetism-Optics)	–**Electricity and Magnetism :**Electric current and ohm's law –Network theorem, Work –Power and energy –Capacitance and inductance –Magnetism and electromagnetism –Electromagnetic induction –**Optics :** Nature of light –Propagation of light –Deviation of light by prisms and dispersion –Image formation –Perception of light and color vision –Lasers
Chem 121	Inorganic Chemistry	–Chemical calculations –Principles of wave mechanics- Electronic configuration of atoms. –Ionization potential. –Type of atomic bonds-Hybridization of orbital's –Resonance- Molecular polarity- Oxidation state. –Molecular geometry.
Gen 101	Computer Science (1)	–
Gen 103	Human Rigths	–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

Math 112	Fundamental Mathematics (2) Differentiation and integration	–Review and Preparation for Calculus. –Limits and Their Properties. –Differentiation. –Applications of Differentiation. –Integration. –Logarithmic, Exponential and Other Functions. –Applications of Integration. –H. Integration Techniques
Math 122	Mechanics (2)	–Motion of a particle in a straight line – Motion in a resisting medium – Vertical motion under the earth's attraction – Simple harmonic motion and its applications. –Inertial frames. Motion in moving frames. – Projectiles. Motion of a particle on a circle. –Impulse, impulsive forces and impact of elastic bodies. Motion of bodies of variable mass. Rockets. –Mechanical systems. D'Alembert's principle. – Constraints. The general equation of Dynamics.Conservative systems Lagrange's theorem on stability.
Phys 103	Electric Circuits	–Electric circuits : Definitions and circuit parameters, Average and effective values –Sinusoidal current and voltage –Complex impedance and phase notation, Series and parallel Circuits –Power and power factor correction, series –Mech current network analysis –Node voltage Network analysis –Mutual inductance –Fourier Method of waveform analysis
Phys 104	Electromagnetic Theory	–Vector analysis –Coulomb's law and electric field –Electrostatic potential –Electrostatic dipole –Dielectric polarization –Poisson and Laplace equations for magnetic potentials –Electromagnetic induction and Faraday's law –Maxwell's equations –Electromagnetic wave equations –Electromagnetic plane wave propagation
Chem 141	physical chemistry	–Gas laws –Kinetic theory of gases and real gases –Thermochemical equations, Hess law, Heat of combustion and heat of formation –Heat capacities and bond energies –Solutions, different ways to express concentration of solutions –Collegative properties –Chemical equilibrium and calculating the equilibrium constant –Lechatlier Principle and application to chemical reactions at equilibrium –Ionic Equilibrium, Acids and Bases and Buffer solution –Salt effect, common ion effect and solubility of sparingly soluble salts – practical
Gen 102	English Language	–Types of common rocks –Writing paragraph + topic sentence –Countable and non-countable nouns –Animal cell structure –Punctuation –The use and non-use of articles + using a Relative clause –Solar energy - Cohesion + signaling –Subject verb agreement + Quit & Rather –Lightening

Gen 104 – Gen 111	مواد ثقافية	اختيار مقرر واحد –
Math 212	Abstract Algebra (1)	–Maps, kinds of maps,binary operations. –groupies and all essential kinds of Groups, subgroups and Lagrange theorem of subgroups. –Cyclic groups and its properties. –Symmetric groups and permutation groups. –Normal subgroups and factor groups. –Homomorphism theorems of groups and Automorphisms group. – Rings and fields.
Math 214	Ordinary Differential Equations	–Definitions. First-order differential equations: linear, separable, –exact and homogenous, –Second-order differential equations. –Reduction of order, constant coefficients, second-order linear equations: ordinary points and regular singular points. Euler's equation. –Series solutions of second-order linear differential equations. Power series, solutions about an ordinary point. Solutions about a regular singular point. –Equal roots of indicial equation and roots differing by an integer.
Math 216	Calculus of Several Variables	–This course develops further the basic topics of the differentiation and integration of functions of several variables. This course consists of three main parts. –Part 1 : Differential calculus of functions of several variables - Limits and continuity - Partial derivatives - Directional derivatives and the gradient - Normal lines and tangent planes - Extreme - Lagrange multipliers. –Part 2: Multiple Integrals- Double integrals in different spaces and their application- Triple integrals in different spaces and their applications - Transformation of coordinates - Change of variables in multiple. –Part 3: Topics in vector Calculus- Line integrals and applications - Green's Theorem - Independent of path of line integrals in the plane and dimensional spaces - Surface integrals - The divergence Theorem - Stock's Theorem.
Math 221	Mech. (3)	–Vector Analysis. –Moments of inertia –Equilibrium of Beams and chains. –Bending and shear forces. –Hydrostatics. –Electro-statics (Attraction and Potential)
Math 241	Computer Science (2)	–Programming: coverage of all the C++ programming language, with special emphasis on pointers and their usage. –C++ Libraries and Tools: Compilation, linking and archiving; dividing programs into reusable units (libraries), C++ programming methods for data hiding and opaque typing; professional Issues: –programming style; –debugging techniques, – safety-first programming methods
Math 217	Introduction to Logic	–The Propositional Logic –1 - Propositional Calculus and proofs –Predicate Logic and Quantifiers –Divisibility Theory of Integers –The Theory of Congruence –Primes and Their Distributions –Finite Continued Fractions.
Math 228	Difference Equations	–Sequences, –Difference Operators, –Solutions of linear homogeneous equations, –Solutions of linear nonhomogeneous equations Fundamentals of Linear Difference systems fixed points and Stability theory, –nonlinear difference equations, –The z-Transform.

Math 211	Real Analysis	–Sets and functions: operations on sets – real-valued functions – equivalence and countability – real numbers – least upper bounds. –Sequences of real numbers: convergent, bounded and monotone sequences – lim sup and lim inf. –Series of real numbers: convergence and divergence – alternating series – series with nonnegative terms – absolute and conditional convergence. –Sequences and series of functions: power series – uniform convergence – Weiestrass's approximation Theorem. –Fourier expansions.
Math 215	Linear Algebra (1)	–What is a field and examples of the well-known fields. Matrices defined over a field, operations on matrices, Echelon form. –Algebra of square matrices, inverted matrix and system of linear equations. –What is a vector space, subspaces, intersection and addition of subspaces. –Linear combination, dependently and independently set of vectors, Basis and Dimension of a vector space. –Linear transformations and linear operators and its proprties. –Transformation from a basis to another basis. –Eigenvalues and eigenvectors. –Similar matrices and diagonalization for square matrices. Applications.
Math 218	Solid Analytic Geometry	–Cartesian and parametric equation for plane in space. –Cartesian and parametric equations for Line in space. –Cartesian and parametric sphere equations for sphere. –Cartesian and parametric circles equations for circles in space. –Relations between Lines, planes and spheres in space. –Paraboloid and ellipsoid, surface in space. –Tangent plane of surfaces in space. –The general equation of the 2nd degree in 3 variables. –General theory of quadratic surfaces
Math 223	Mechanics (4)	–Plane motion of a particle. –Kinematics. Intrinsic coordinates. –Constrained motion. –Stability of equilibrium and stationary motion – Damped simple harmonic motion – forced vibrations. –Central orbits. –Elements of celestial Mechanics. –Orbital motion of planets and Satellites. –Motion of a particle in three dimensions. –Motion on a smooth surface. –Motion on a rotating earth. –Plane motion of a rigid body.
Math 231	Introduction to Statistics and Probability	–Descriptive Methods for Qualitative Data. –Descriptive Methods for Quantitative Data. –Coefficient of Correlation Pearson's and Spearman's rank correlation coefficients. –Simple Linear Regression Model. –Introduction to probability, Sample space, Events, Operations with Events,Counting Sample Points, Probability of an Event, Some Probability Laws, Conditional Probability, Bayes Rule. –Introduction to the random variables: classification of random variables , probability mass and density function , distribution function, expectation and variance of random variables. –The moment generating function , the properties of the m.g.f. –Some probability distributions. Binomial, Poisson, Geometric distribution, Normal distribution, Standard normal distribution.
Math 224	Mathematical Biology	–The Theory of Linear Difference Equations Applied to population Growth. –Nonlinear Difference Equations; Steady states and fixed points. Stability. –Period doubling bifurcations. –Chaos. –Applications of Nonlinear Difference Equations to Population Biology;

		Host-parasitiod systems - Continuous Processes and Ordinary Differential Equations; An Introduction to Continuous Models; Phase-Plane Methods and Qualitative Solutions; Structural stability and instability. Lyapunov functions. –Applications of Continuous Models to Population Dynamics, Prey-predator models. –Limit Cycles, Oscillations, and Excitable Systems.Epidemic models.
Math 242	Computer Algebra	–Introduction to symbolic mathematics systems in general and Maple in particular. –Effective use of Maple. –Numbers and Functions. –Manipulating Algebraic Expressions. –Solutions of Equations. –Programming in Maple. –Graphics. 8- Other applications based on student interests.
Math 311	Measure Theory	–Basic definitions. –Riemann integration. –Measure function, Lesbegue measure. –Measurable functions. –Lesbegue integration. –Measure dynamics.
Math 313	Numerical Analysis (1),	–IDEAS OF APPROXIMATION. –Round-off and truncation errors, . –ROOT FINDING, nonlinear equations (Bisection method, fixed-point, Newton's method, secant method), APPROXIMATION METHODS Interpolation, –Lagrange & Hermite polynomials, Splines. –Dived difference formula, Newton interpolation polynomial, NUMERICAL INTEGRATION AND DIFFERENTIATION. Trapezoidal rule, composite trapezoidal rule, Simpson's rule, Romberg integration. –Gaussian quadrature. –Euler-Maclaurin. ODEs: INITIAL VALUE PROBLEMS Enler's method, Taylor's metod, Runge Kutta methods, multi-step methods.
Math 331	Probability Theory (1)	–Joint Probability Distributions: joint mass and densty function, marginal functions, joint distribution function, Conditional distribution, Expectation of the sum of random variables, Covariance and Variance of sum of random variables and Correlation of the random variables.) –The Central limit theorem , the law of larg numbers, Convergence, the cahracteristic function. –Probability Generating Function (p.g.f.) p.g.f for some distributions, Derive the mean and the variances from p.g.f. –Introduction to functions of random vvariables.
Math 333	Statistical Theory (1)	–Sampling Distributions: (The sampling distribution of the mean, variance and the proportion- The sampling distribution of the difference between means and between the proportions - The sampling distribution of the ratio of variances) –Parametric Point Estimation: (Properties of the estimators - The Information function - The methods of the point estimations) –Parametric Interval Estimation: (The confidence interval of the unknown parameter of one population - The confidence interval of the difference between two unknown means - The confidence interval of the difference between two proportion - The confidence interval of the ratio of the variances of two populations) –Tests of Hypotheses for a Single Sample: (About the mean, proportion and the variance of the population)

Math 341	Structured Programming	–Induction and Recursion. –Propositional Logic: Syntax, Semantics, Deductions. –Propositional Logic: Soundness, Completeness, Compactness. –First-Order Logic: Syntax, Semantics, Definability, Deductions. –First-Order Logic: Soundness, Completeness, Compactness. –Basic Ideas of Nonstandard Analysis.
Math 342	Database Management Systems	–Basic principles of database management systems (DBMS) and of DBMS application development. –DBMS objectives, –systems architecture, database models with emphasis on Entity-Relationship and Relational models, –data definition and manipulation languages, –the Structured Query Language (SQL), –database design, application development tools, –access methods interfaces, –security, concurrency control and recovery, –query processors and optimizers
Math 347	Special issues in computer science (1)	–Pre-requisite: Uni. 101, Practical
Math 328	Difference Equations (2)	–Dynamics of First-Order Difference Equations, –Linear Difference Equations of Higher Order, –Systems of Linear Difference Equations, –Stability Theory, –Higher-Order Scalar Difference Equations, –The Z-Transform Method and Volterra Difference Equations, –Oscillation Theory, –Asymptotic Behavior of Difference Equations.
Math 340	Mathematical Log	–Induction and Recursion. –Propositional Logic: Syntax, Semantics, Deductions. –Propositional Logic: Soundness, Completeness, Compactness. –First-Order Logic: Syntax, Semantics, Definability, Deductions. –First-Order Logic: Soundness, Completeness, Compactness. –Basic Ideas of Nonstandard Analysis.
Math 324	Theory of Functions and Special Functions	–Series solution of differential equations. –Gamma and Beta Functions. –Legendre polynomials and functions. –Bessel functions. –Hermit polynomials. –Laguerre polynomials. –Hypergeometmic functions. –Shebyshev polynomials. –Elliptic integrals. Jacobi's elliptic functions.
Math 318	Integral Equations	–**Volterra Integral equations:** (Relationship between linear differential equations and Volterra integral equation- Resolvent Kernel - Method of successive approximations - Convolution type and solution by Laplaces' transformation - Volterra integral equation of the first kind - Apel's integral equation and Euler integral) –**Fredholm Integral Equations :**(The method of Fredholm's determinant- Iterated Kernels- Degenerate Kernels- Homogeneous integral equations - Nonhomogenous symmetric equations)
Math 334	Regression Analysis	–Simple linear regression, –Multiple linear regression –Analysis of residuals and predictions, –Detecting the outliers and multicolinearity, –Stepwise methods.
Math 343	Computer Algebra	–General Introduction. –Brief history of mathematical computing. –Mathematical software packages, programming languages.

		Programming in MATLAB. –Essentials of MATLAB; vectors and matrices, colon notation, numeric output, graphics, control structures and logical tests. –MATLAB functions. Symbolic and high precision computations. –Essentials of programming Matlab using m-file scripts and functions. –Graphic visualizations.
Math 344	Artificial Intelligence and Expert Systems	–Studying the foundations of Artificial Intelligence in today's environment and instilling an understanding of representations and external constraints with the idea of enabling a student to think creatively. –There are many cognitive tasks that people can do easily and almost unconsciously but that have proven extremely difficult to program on a computer. –Artificial intelligence is the problem of developing computer systems that can carry out these tasks. –The course can focus on some central areas in AI such as: representation and reasoning, learning, AI languages such as Prolog and Lisp, expert systems, machine learning, robots, and natural language processing.
Math 345	Operating Systems	–Principals of operating systems. –The operating systems as a control program and as a resource allocator. –The concept of a process and a concurrency problems. –Synchronization, mutual exclusion, deadlock, Additional topics include memory management, file systems process scheduling threads and protection.
Math 319	Number Theory	–Divisibility. –Congruence. –Quadratic Reciprocity and Quadratic forms. –Some Diophantine equations. –Continued Fractions. –Some Number- Theoretic Functions. –Primes and Multiplicative Number Theory. –Algebraic Numbers.
Math 413	Numerical Analysis (2)	–Least Square approximations and curve fitting – Solution of Linear System of Equations –Iterative Methods(1- Elementary row operations and Gaussian elimination. 2- Jacobi, Gauss-Seidel and SOR methods 3- Steepest descent; Conjugate gradient method 4- ADI and dimensional splitting methods 5- Multigrid) –Power method for eigenvalues and eigenvectors –Fast Fourier transform –Explicit teaching of Mathematica or Maple or Matlab package.
Math 418	Lattice Theory	–Partially ordered, totally ordered and inductively ordered sets. –Lattice and complete lattice. –Sublattices and direct product of lattices. –Lattices and ordered homomorphisms and the other kinds of homomorphisms –Distributive and modular lattices. –Complemented lattices. –Boolean algebra. –Applications in switching and logic circuits. –Ideals and congruence relations.
Math 421	Operations Research	–Linear Programming. –Simplex method. –Duality and sensitivity analysis. –Transportation and assignment problems. –Network models. –Dynamic programming.
Math 431	Statistics Theory (2)	– hypotheses testing: Applications(tests of hypotheses of two samples - tests concerning meas- tests concerning difference between meas- tests concerning difference between proportions- Goodness of fit- The wilcoxon two sample rank test.- tests based on Runs).

		–Hypotheses Testing Theory:(Statistical hypotheses. Testing a Statistical hypotheses- Losses and risks- Neyman pearson Lemma- The Power function of a test- Likelihood ratio test). –Non-Parametric Test(The sign test - The signed rank test- Rank sum test: the U test, the H test).
Math 441	Data Structure	–Basic elements of data structure. –Topics covered in the course includes: data abstraction, a survey of linear data structures (array representations and applications, stack and queues, array application and representation, implementation of recursion using stack, linked list) –nonlinear data structures (tree, graph and priority queues), –file organization and access methods, stack and queues, memory management, –a discussion of more advanced internal and external sort a search algorithms, and the trade-offs involved in the use of different data organizations. –The emphasis will be on algorithm analysis and trade-offs study.
Math 442	Neural Networks	–Introduction –Simple neural nets for pattern classification –Back propagation neural net and radial basis functions –Pattern association –Neural nets based on competition –Other neural networks –Applications of neural networks.
Math 432	Stochastic Processes (1)	–Introduction in Stochastic processes –Poisson Processes and Their Generalizations –Markov Chain –Birth-Death Processes.
Math 411	Theory of Ordinary Differential Equations	–Existence and uniqueness theory. –Some concepts from real function theory. –Fundamental of Existence and uniqueness theory. –Dependence of solutions on initial condition and on functions. –Existence and uniqueness theorems for systems. –Higher-order differential equations. –The theory of linear differential equations. –Introduction. Basic theory of Homogenous linear systems. –Further theory of the Homogenous linear systems. –The non-homogenous linear systems. –Basic theory of the n-th order homogeneous linear differential equations. –The n-th order of non-homogenous linear equations –.Sturm theory. –System of linear-differential equations. –Basic theory methods of solutions.
Math 414	Functional Analysis	–Metric Spaces: Definition and examples – open sets , closed sets , the closure. –Normed Linear Spaces : Definition and topology of a normed space – examples – subspaces – sequences – bounded linear transformations – linear homeomorphisms – finite-dimensional normed spaces. – Hilbert Spaces: symmetric (bilinear) forms and inner products – orthogonality and Gram-Schmidt orthonormalization process – adjoint operators – self- adjoint operators – positive operators – orthogonal projections.
Math 426	Modeling and Simulations	–Continuous time population models (Malthus, Logistic, Their equilibrium and stability) - Discrete time population models (Logistic, Ricker Their equilibrium and stability) Multi-species population models (Predator-prey, Competition, epidemics, fractals Equilibrium and stability). Space Shuttle motion. Tacoma bridge accident. Multiobjective optimization (crop spray, fishing fleets, radiotherapy etc…) Then student projects are done. Some applications of control theory.

Math 434	Analysis of Variance	–One–way ANOVA, balanced and non-balanced designs. –Two –way ANOVA, with fixed effect and interaction.
Math 435	Time Series and Forecasting	– Time series models – AR,MA,ARMA and their properties – Parameter estimation – Model identification – Forecasting – The Box –jencins approach to forecasting –Second time series models.
Math 443	Computer Graphics	–Overview of Computer Graphics – Basic principles – Graphics Systems and Primitives –Library / system support for graphics –Point plotting - Straight line drawing - Curved line drawing –Two-Dimensional Graphics –Mathematical background and Coordinate System illumiuation, shoding, renderg and texturing –Transformations (Translation, Scaling, Rotation) –Animation , -Approaches (segments vs. direct) –Filling (Painting) – Windowing – Clipping. –Advanced software tools.
Math 444	Design and Analysis of Algorithms	–Building existing skills in mathematical analysis of algorithm complexity, including lower bounds, worst-case and average-case behavior. –General techniques in algorithm design (such as divide and conquer, greedy and dynamic programming approaches) in the context of problem domain like graph, sorting, searching and optimization problems. –Introduction the topic of NP-complete problems.
Math 412	Graph Theory	–Introduction to graph theory. –Subgraphs, spanning and induced subgraphs. –Walks, trails, and paths. –Isomorphisms, isomorphic invariants. –Simple graphs and its ptoperties. –Deleting and adding verticies and edges.operations on graphs. –Kinds of graphs, union, Join, and product of graphs. –Theorems and properties of Trees and planar graphs. –Directed graphs (Digraphs), redefine all concepts over digraphs such as digraphs with loops, dericted walks, dericted pathes, –Graphs and Matrices, to represent graphs and digraphs as a matrix.
Math 436	Reliability Theory	–Introduction to reliability theory –Network modeling and evaluation of simple systems - Network modeling concepts- Series and Parallel systems- Series-parallel systems- Partially redundant systems- Standby redundant systems. –Network modeling and evolution of complex systems- Modeling and evolution concepts- Conditional probability approach- Cut set method -Tie set method- Event trees. –Probability distributions in reliability evaluation- General reliability functions- Evaluation of the reliability functions- Shape of reliability functions- The Poisson distribution- The normal distribution- The exponential distribution- The weibull distribution-The gamma distribution. –System reliability evaluation using probability distributions.
Math 445	Image Processing	–fundamentals (What is digital image processing-Digital image representation-Image types). –Intensity transformatins function(Histogram processing- Spatial filtering). –Image restoration(A model of the image degradation- Noise models - Direct inverse filtring). –Color image processing(Color image representation-Converting to other color spaces- Color transformatins).

		–Image compression(Coding redundancy- Interpixel redundancy- JPEG compression). –Image segmentation(Point, line and edge detection – Thresholding - Region-Based segmentation). –Wavelets(The Fast wavelet Transform- Wavelet decomposition structures- Wavelet in image processing).
Math 400	Essay or Research	–project Meeting to see the progress

٦- متطلبات الالتحاق بالبرنامج :

الحصول على شهادة الثانوية العامة شعبة الرياضيات أو أى شهادة عربية أو أجنبية معادلة

٧- القواعد المنظمة لاستكمال البرنامج :

- **ينقل الطالب إلى المستوى الثانى إذا إجتاز ما لايقل عن ١٨ ساعة معتمدة ويسجل فى المستوى الثالث إذا إجتاز ما لايقل عن ٤٢ ساعة معتمدة ويسجل فى المستوى الرابع إذا إجتاز ما لايقل عن ٦٦ ساعة معتمدة، ولا تحتسب متطلبات الجامعة ضمن هذه الساعات.**
- **شرط استكمال البرنامج: هو أن يجتاز الطالب بنجاح ١٤٦ ساعة معتمدة بالإضافة إلى التدريب صيفى**

٨- طرق و قواعد تقييم الملتحقين بالبرنامج :

الطريقة	ما تقيسه من المخرجات التعليمية المستهدفة
١- الإختبار التحريري	المعرفة والفهم - المهارات الذهنية
٢- الإختبار الشفهي	المعرفة والفهم - المهارات الذهنية – المهارات العامة
٣- الإختبار العملي	المهارات المهنية والعملية – المهارات العامة
٤- إختبارات دورية	المعرفة والفهم - المهارات الذهنية
٥- تقرير	المهارات العامة- المعرفة والفهم
٦- دراسة حالة	المهارات الذهنية - المهارات المهنية والعملية – المهارات العامة
٧- تدريب ميدانى	المهارات الذهنية - المهارات المهنية والعملية – المهارات العامة
٨- ملفات انجاز	المعرفة والفهم - المهارات الذهنية - المهارات المهنية – المهارات العامة

٩- طرق تقويم البرنامج :

العينة	الوسيلة	القائم بالتقويم
٢٠	استبيان	١ – طلاب الفرقة النهائية
٢٥	استبيان	٢ – الخريجون
٢٠	استبيان	٣ – أصحاب الأعمال
٣	تقرير	٤ – مقيم خارجي أو ممتحن خارجي
		٥ – طرق أخرى

المسئول عن البرنامج : د. فاتن شيحة التوقيع :

التاريخ : / / ٢٠١٣

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس التوقيع :

التاريخ : / / ٢٠١٣

المستوى الأول

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
الرمز الكودي:Math 111	**اسم المقرر : Algebra & Geometry**	**المستوى: الثانى**
التخصص : إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢ـ هدف المقرر:	**The aims of this course are to:** 1- provide students with various methods, theories in algebra and geometry. 2- Know and understand the fundamental conceptes in algebra and geometry.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to** a1-acquire an understanding of basic concepts of algebra and geometry. a2 - recognize notions of mathematical induction, complex numbers, partial fractions and binomial theorems. a3-be aware of the geometric properties of straight lines and conic sections
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to**: b1 –interpret mathematical problems using basic concepts of algebra and geometry. b2- simplify the algebraic expressions. b3- construct elementary proofs of mathematical statements utilizing inductive arguments and arguments by contradiction; b4 – illustrate geometrical problems expressed in terms of polar coordinates
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing this course, students will be able to** c1-analyze basic concepts and results in algebra and geometry and apprehend their applications. c2- solve problems in algebra and geometry c3- use information technology to solve some related problems in algebra and geometry.
د- المهارات العامة :	**d-General and Transferable Skills** **On completing this course, students will be able to** d1. Think independently, set tasks and solve problems on a scientific basis. d2. use , efficiently, information and communication technology d3. Work effectively in groups.
٤ـ محتوى المقرر :	**Algebra** • Mathematics induction. • Partial fractions • Binomial theorem. • simple method for sum of series • Solution of cubic equations • Solution of 4th degree equations • Sets, subsets, set operations and inductively definition of sets • Equivalent relations, equivalence classes, partitions and partial order .

• Maps, composition of maps, kinds of maps and inverse functions, • permutation on finite sets. • equivalent sets and cardinality of sets • binary operations, examples of groups and fields. **Geometry** • Cartesian and polar coordinates in plane • Equations of straight line- The common equation of pair of straight lines • Introduction to conic section- parabola - ellipse- hyperbola • The general equation of the second degree in two variables and polar equations of some plane curves	
1- lectures 2- tutorials **3-** use information technology	٥- أساليب التعليم و التعلم
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة
٧- تقويم الطلاب :	
1- Final exam to assess a1,a2,a3, c1, c2, c3 2- Oral exam to assess b1 ,b2,b3, b4, d1, d2, d3 3- Mid-Term Exam to assess a1, a2, b1, b2, d1-d3	أ- الأساليب المستخدمة
1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 - Other types of assessment 0 Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
- Lecture Notes: " Analytic geometry in plane"	أ- المذكرات
A.C. Burdette, "An introduction to analytical geometry and calculus", Academic press , London 1969	ب- الكتب ملزمة
- E. Swokowski, M. Olinick & D.Pence, "Calculus", 6th Edition, PWS Publishing Co- Schaum's series , Analytic Geometry, 1994. -P.J. Eccles, An Introduction to Mathematical Reasoning: Numbers, Sets and Functions, Cambridge University Press, 1997.	ج- كتب مقترحة
http://www.math.niu.edu/~beachy/aaol http://mathworld.wolfram.com/Abacus.html	د- دوريات علمية أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Algebra					
Mathematics induction.	1	a1, a2	b1, b2	c1, c2, c3	d1,d3
Partial fractions	2	a1, a2	b1, b2	c1, c2, c3	d1,d3
Binomial theorem.	2	a1, a2	b1, b2	c1, c2, c3	d1,d3
simple method for sum of series	3	a1, a2	b1, b2	c1, c2, c3	d1,d3
Solution of cubic equations and solution of 4th degree equations	3	a1, a2	b1, b3	c1, c2, c3	d1,d3
Sets, subsets, set operations and inductively definition of sets	4	a1, a2	b1, b2	c1, c2, c3	d1, d2, d3
Equivalent relations, equivalence classes, partitions and partial order .	5	a1, a2	b1, b2	c1, c2, c3	d1,d3
Maps, composition of maps, kinds of maps and inverse functions, permutation on finite sets.	6	a1, a2	b1, b2	c1, c2, c3	d1,d3
equivalent sets and cardinality of sets	7	a1, a2	b1, b2	c1, c2, c3	d1
binary operations, examples of groups and fields.	7	a1, a2	b1, b2	c1, c2, c3	d1, d2, d3
Geometry					
Cartesian and polar coordinates in plane	8	a1, a3	b1, b4	c1, c2, c3	d1,d3
Equations of straight line- The common equation of pair of straight lines	9	a1, a3	b1, b4	c1, c2, c3	d1,d3
Introduction to conic section- parabola - ellipse- hyperbola	10-13	a1, a3	b1, b4	c1, c2, c3	d1,d3
The general equation of the second degree in two variables polar coordinates and polar equations of some plane curves	14	a1, a3	b1, b4	c1, c2, c3	d1, d2, d3

أستاذ المادة : د. عواطف شاهين

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ - بيانات المقرر		
الرمز الكودي :Math 121	**اسم المقرر : Mechanics 1**	**المستوى : الاول**
التخصص : إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية :٣ ساعات معتمدة نظري: ٢ تمارين:٢ عملي : ٠**	

٢ - هدف المقرر :	**For students undertaking this course, the aims are to:** 1 -Understand the basic principles of classical mechanics 2- Study some engineering and physical applications. 3- Illustrate the ideas of mechanics by applying them to certain key problems.
٣ - المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم:	**a- Knowledge and Understanding** **On completing this course, students will be able to** a1- Understand the basic concepts of mechanics a2- Be familiar with vectors and their use confidently in mechanics problems a3- Be familiar with the notions of force, Equilibrium and Frame of rods, newton´s law, simple harmonic motion, and projectiles
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to** b1- solve simple problems in mechanics on vectors b2- Apply the second law of Newton for the motion in plane b3- solve problems for particles which have equation of motion similar to that of the simple harmonic motion statements utilizing inductive arguments and arguments by contradiction b4- Evaluate the angular momentum of forces about a point as well as about axes b5- solve problems on the equilibrium of systems
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1- Use logical steps in solving problems c2 – Prove Geometric relations by vectors c3 – Model real practical application c4 – Solve mechanical problems analytically
د- المهارات العامة :	**d-General and Transferable Skills :** **On completing the course students will be able to:** d1- Benefit from developing his problem solving skills,modelling skills, logical thought and analysis d2 – Use Internet and Library efficiently d3 – Problem solving d4 – work in a team
- محتوى المقرر :	1- Vector algebra; dot and cross products 2- Forces groups 3- Equilibrium and Frame of rods 4- simple harmonic motion and applications 5- motion of projectiles

٥- أســاليــب التعليـــم و التعلـم	1- lectures 2- tutorials 3- use information technology
٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Final exam to assess b1-b5, c1-c4 2- Oral exam to assess a1-a3 3- Mid-Term Exam to assess b1-b3, c1-c4 4- Home work to assess b1-b5, d1-d4
ب- التوقيت	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	departmental course notes
ب- الكتب ملزمة	1- D. Kleppner & Robert J., An Introduction to Mechanics, 2- Kolenkow, McGraw-Hill, 1973 Salvadori, Mario George, Statics and strength of structures, Prentice-Hall, Prentice-Hall , 1971. Bridgeman, T. , Vectors, London, Macmillan Education, 1983.
ج- كتب مقترحة	1- Targ. S., Theoretical Mechanics A Short Course, English Translation, Mir publisher , 1976 . 2- Loney S. L. Dynamics of particles , Cambridge, 1960. 3- Basaly, W. A. Dynamics of particles and rigid bodies ,1969.
د- دوريـــات علميـــة أو نشرات	http://uawc1.wayne.uakron.edu/online/notes-statics.html

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Vector algebra; dot and cross products	1-3	a1-a3	b1-b2	c1-c2	d1-d2
2- Forces groups	4-6	a1-a3	b1-b5	c1-c4	d1-d4
3- Equilibrium and Frame of rods	7-8	a1-a3	b1-b5	c1-c4	d1-d4
4-simple harmonic motion and applications	9-11	a1-a3	b1-b5	c1-c4	d1-d4
5-motion of projectiles	12-14	a1-a3	b1-b5	c1-c4	d1-d4

أستاذ المادة د. / الشحات عبد العزيز صالح

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة: المنصورة
كـــلية: العلـــــوم
قـــســـم:الفيزيـــاء

توصيف مقرر دراسى

١ـ بيانات المقرر		
الرمز الكودي :Phys 101	اسم المقرر :Thermal Physics and Properties of Matter	المستوى : الاول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعات معتمدة نظرى:٢ تمارين: ١ عملى:٢	

١ـ هدف المقرر:	**For students undertaking this course, the aims are to :** 1- Introducing the students the basics and fundamentals of heat and thermodynamics. 2- Use the principle of Zeroth law of thermodynamics, thermal expansion of solids and liquids, of gasses. 3- Study the heat and thermal energy, heat capacity and specific heat, latent heat, thermodynamic process and the liquification of gasses 4. Introducing the principle of the basics and fundamentals of Properties of matter 5- Study the basic concept of the physical quantities and their units and dimensions. 6- Acquire the student's skills to drive the applications of simple harmonic motion. oscillatory motion 7- Outline the basic information of rotational dynamics, Earth satellites, fluids, surface tension, elasticity.
٢ـ المستهدف من تدريس المقرر:	
أـ المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1-Know more information about thermal physics and its applications. a2-Define the physial terms like Zeroth law of thermodynamics, thermal expansion of solids and liquids, heat and thermal energy, specific heat and heat capacity. a3-Understand the principles of heat capacity and specific heat to increase the student's knowledge about different behavior of materials. a4-Define the principles of units and dimensional analysis. a5-List the basic information of oscillatory motion and rotational dynamics. Earth satellites. a6-Know the student to make experiments in physics lab related to properties of matter course. a7-Recognize the principles of fluids mechanics, surface tension and elasticity to increase the student's knowledge about materials.
أـ المهارات الذهنية	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Apply the principles of thermodynamic process and its applications. b2-Predict thermal behavior of materials by discussing related physical phenomena. b3-Apply more information about properties of matter and their applications. b4-Distinguish between the physial terms like units and dimensions, oscillatory motion, rotational dynamics, Earth satellites, and elasticity. b5-Analyze the principles of fluids motion and surface tension and their applications. b6-Predict behavior of materials by discussing related physical phenomena b7-Apply the mathematical formulas in solving problems.
ج- المهارات المهنية الخاصة بالمقرر:	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-Choose and classify data obtained from thermal physics experiments

c2-Design physics experiments to apply thermal physics phenomena in physics lab
c3-Design a diagram graphically for thermodynamic processes
c4-Reform mathematical formula in solving challenging problems related to thermal physics
c5-Choose and classify data obtained from physics experiments related to properties of matter course.
c6-Design physics experiments to apply oscillatory motion, fluids, surface tension and elasticity in physics lab.
c7-Design a diagram graphically for oscillatory motion, rotational dynamics and fluids motion.
c8-Reform mathematical formula in solving problems related to units and dimensions, oscillatory motion, rotational dynamics, fluids and elasticity.

د- المهارات العامة :

d- General and Transferable Skills

On completing this course, students will be able to:

d1-Present data in graphical using IT methods.
d2-Managements of self time, data and knowledge
d3-Work in a group to perform an experiment.
d4-Search for information about the course materials.
d5-Communicate effectively with students by discussing results obtained from experimental physics lab.

٣- محتوى المقرر:

Thermal physics: Zeroth law of thermodynamics
Thermal expansion of solids and liquids
Heat and thermal energy
Heat capacity and specific heat, latent heat
Thermodynamic process
Liquification of gasses
Properties of matter: Units and Dimensions
Oscillatory Motion
Rotational Dynamics
Earth Satellites
Fluids
Surface Tension
Elasticity
Solve problem and revision

٤- اساليب التعليم والتعلم:

1- Lectures using data show and board.
2- Discussion sessions.
3- Class activity.
4- Laboratory work.

٥- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:

The same as normal students, only skeletal disabilities are allowed in the Faculty of Science

٦- تقويم الطلاب :

أ- الأساليب المستخدمة :

7- Student Assessment Methods

Final exam	to assess	a1-a7, b1- b7, c1-c8,d1-d5
Oral exam	to assess	a1-a7, b1- b7
Practical exam	to assess	a5,a6, c2,c3, c4,c6, d1,d3-d5
Mid-Term Exam	to assess	a1-a7, b1- b7, c1-c8,d1-d5

ب- التوقيت :

Assessment Schedule

Final exam	Week #	16
Oral exam	Week #	16
Practical exam	Week #	15
Mid-Term Exam	Week #	7

ج- توزيع الدرجات :

Weighting of Assessments

Mid-Term Examination	10%
Final-Term Examination	60 %
Oral Examination	10%
Practical Examination	20%
Total	100%

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:

Notes of (**Thermal physics & Properties of matter**) prepared by the physics department.

ب- كتب ملزمة

ج- كتب مقترحة :

Raymond A. Serway ,Physics for Scientists and Engineers, John W. Jewett 6th Edition, 2004.

د- دوريات علمية أو نشرات..

http://en.wikipedia.org

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Thermal Physics : Zeroth law of thermodynamics	1-3	a1-a2	b1-b2	c1-c2	d1-d5
Thermal expansion of solids and liquids	4-5	a3			
Heat and thermal energy	6-8	a3			
Heat capacity and specific heat, latent heat	9-11	a3			
Thermodynamic process	١٤12-	a3		c3	D1-d5
Liquification of gasses	15	a3		٤c	
Properties of matter: Units and Dimensions	1-2	a4	b3-b4	c5	
Oscillatory Motion	3-5	a5		c6	
Rotational Dynamics	6-8	a5		c6	
Earth Satellites -Fluids	9-11	a5			
Surface Tension Elasticity	12-14	a5	b5-b6	c7	
Solve problem and revision	15	a6-a7	b7	c8	D1-d5

أستاذ المادة: أ.د./ نجاح عبد الرحيم الششتاوى

رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق

جامعة: المنصـــورة
كـــلية: العلـــــوم
قـــســـم:الفيزيـــاء

توصيف مقرر دراسى

١ -بيانات المقرر		
الرمز الكودى :Phys 102	أسم المقرر:Electricity and Magnetism - Optics	المستوى: الأول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢	

٢- هدف المقرر:	**For students undertaking this course, the aims are :** 1- Aims at introducing the students to the basics and fundamentals of Electricity and Magnetism including, Electric current and ohm's law, Network theorem, Work, power and energy, Capacitance and inductance, Magnetism and electromagnetism, Electromagnetic induction. 2- Aims at introducing the students to the basics and fundamentals of geometric Optics including, Nature of light, propagation of light, deviation of light by prisms and dispersion, image formation, perception of light, color vision and Lasers
٣- المستهدف من تدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Introduce the principles of Electricity and Magnetism. a2-Outline the basic information of electric current and ohm's law, network theorem and work. a3-Enable the student to use different concepts of capacitance and inductance in physics lab. a4-Use the principles of magnetism, electromagnetism and electromagnetic induction to increase the student's knowledge about the behavior of magnetic materials. a5-Introduce different application of network theorem. a6-Introduce the principles of geometrical optics. a7-Outline the basic information of nature of light, propagation of light, deviation of light by prisms and dispersion, image formation, perception of light, color vision and Lasers. a8-Enable the student to use make experiments in physics lab related to geometric Optics course. a9-Use the principles of geometric optics to increase the student's awareness about different behavior of optical materials
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Know more informations about electricity and magnetism and its applications. b2- Define the physial terms like Electric current and ohm's law, Network theorem, Work, power and energy, capacitance and inductance, magnetism and electromagnetism, electromagnetic induction. b3- Explain the principles of geometrical optics and its applications. b4- Predict optical behavior of materials by discussing related physical phenomena b5- Know more information about geometrical optics and their applications. b6- Define the physial terms like nature of light, propagation of light, deviation of light by prisms and dispersion. b7- Explain the principles of image formation, perception of light, color vision and Lasers.

c-Professional and Practical Skills: **On completing this course, students will be able to:** c1- Choose and classify data obtained from physics experiments related to electricity and magnetism course. c2- Design physics experiments to apply electricity and magnetism phenomena in physics lab c3- Use mathematical formula in solving challenging problems related to c4- Choose and classify data obtained from physics experiments according to the c5- Design physics experiments to apply geometric optics principles. c6- Design a diagram graphically for image formed due to geometric optics phenomena. c7- Use mathematical formula in solving problems related to geometric optics course.	**ج- المهارات المهنية الخاصة بالمقرر:**
d-General and Transferable Skills: **On completing this course, students will be able to:** d1- Present data in graphical using IT methods. d2- Managements of self time, data and knowledge d3- Search for information related to electricity and magnetism course topics. d4- Search for information related to geometric optics course topics. d5- Present results in oral and writing means. d6- Communicate effectively with students by discussing results obtained from experimental physics lab.	**د- المهارات العامة :**
Electricity and Magnetism : Electric current and ohm's law Network theorem Work Power and energy Capacitance and inductance Magnetism and electromagnetism Electromagnetic induction **Optics** : Nature of light Propagation of light Deviation of light by prisms and dispersion Image formation Perception of light and color vision Lasers	**٤- محتوى المقرر:**
1- Lectures using data show and board. 2- Discussion sessions. 3- Class activity. 4- Laboratory work.	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
٧- تقويم الطلاب :	

Final exam	to assess	a1-a9, b1-b7, c1-c7 and d1-d6	**أ- الأساليب المستخدمة :**
Oral exam	to assess	a1-a10, b1-b8 and c1-c7	
Practical exam	to assess	a3, a7, a8, b1-b2,, b4, c1-c2 and d1,d5	
Mid-Term Exam	to assess	a1-a9, b1-b7, c1-c7and d1-d6	

ب- التوقيت :	Final exam	Week #	16	
	Oral exam	Week #	16	
	Practical exam	Week #	15	
	Mid-Term Exam	Week #	7	

ج- توزيع الدرجات :	Final-Term Examination	10%	
	Oral Examination	60 %	
	Practical Examination	20%	
	Mid-Term Exam	10%	
	Total	100%	

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:	Notes Electricity & Magnetism Notes of Optics prepared by the physics department.
ب- كتب ملزمة	
ج- كتب مقترحة :	Raymond A. Serway ,Physics for Scientists and Engineers, John W. Jewett 6th Edition, 2004.
د- دوريات علمية أو نشرات..	http://en.wikipedia.org

(ب) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Electric current and ohm's law	1-2	a1-a2	b1	c1	d1-d5
Network theorem	3-4	a2	b1	c1	d1-d5
Work	5-6	a2	b1	c1	
Capacitance and Inductance	7-8	a3	b1	c1	
Magnetism and electromagnetism	9-10	a3	b1		d1-d5
Electromagnetic conduction	11-13	a4	b2		
Nature of light	14	a4	b2		d1-d5
Propagation of light	1-2	a6, a7	b3, b4	c4, c5	
Deviation of light by prisms	3-4	a7	b5, b6		
Image formation	4-7	a8	b5, b6	c6	
Precipitation of light and color vision	8-11	a8, a9	b6	c6, c7	
Lasers	12-14	a9	b7		

أستاذ المادة: د./ شلبية ابراهيم محمود بدر

رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق

جامعة : المنصورة
كلية : العـــلوم
قسـم : الكيميـــاء

١ - بيانات المقرر		
الرمز الكودى :Chem 121	أسم المقرر: اسس الكيمياء غير العضوية	المستوى: الأول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢	

٢ - هدف المقرر :	**For students undertaking this course, the aims are to:** 1 -Introduce the basic principles of general chemistry, chemistry calculations, atomic structure and electronic configuration 2 -Introduce the basic principles of atomic spectra, geometric shape of molecule, bonding, ionic equilibrium and their application..
٣ - المستهدف من تدريس المقرر	
أ - المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Understand the type of a compound and its structure a2- Recognise the atomic structure and type of bonding. a3-Know the shape of the molecule,chemical equilibria and conductance
ب- المهارات الذهنية :	**b- Intellectual Skills :** **On completing the course students will be able to:** b1 -Elucidate the bonding types, atomic structure, geometrical shape of the molecules. b2- Predict the polarity of the molecule and the conductance of different electrolytes. b3- Apply ionic equilibrium and its application.
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1 -Identify the radical, basic or acidic c2 - Separate a mixture to its component. c3 - Identify simple inorganic liquids..
د- المهارات العامة:	**d-General and Transferable Skills** **On completing the course students will be able to:** d1 -Use IT and web search engines for collecting information - d 2 - Work effectively both on a team , and independently on solving general and inorganic chemistry problems. d3 -Communicate effectively with his lecture and colleagues.
٤ - محتوى المقرر:	1- Chemical calculations 2- Principles of wave mechanics- Electronic configuration of atoms. 3- Ionization potential. 4- Type of atomic bonds-Hybridization of orbital's 5- Resonance- Molecular polarity- Oxidation state. 6- Molecular geometry.
٥ - أســاليــب التعليـــم و التعلـم	1- Lecture using data show and board 2- Problem classes and group tutorial 3- Report and discussion groups 4- Laboratory assignment.
٦ - أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧- تقويـــــم الطـــلاب :		
أ- الأساليب المستخدمة	1 - Final examination 2 - Oral examination 3 - Practical examination 4 – Quizzes	to assess a1-a3,b1-b3 to assess a1-a3,b1-b3 to assess c1-c3 to assess a1-a3,b1-b3
ب- التوقيت	1 - Final examination 2 - Oral examination 3 - Practical examination 4 – Quizzes	week 15 week 15 week 13 week 4,8,**12**
ج- توزيع الدرجات	Final-Term Examination Oral Examination Practical Examination Mid-Term Exam Total	10% 60 % 20% 10% 100%
٨- قائمة الكتب الدراسية و المراجع :		
أ- المذكرات	1 - General chemistry	
ب- الكتب ملزمة	Chemistry, Raymond, 7th Ed., 2002 Concise inorganic chemistry, J.D. Lee, 1996. General Chemistry, by Linus Pauling, 1988	
ج- كتب مقترحة		
د- دوريـــات علميـــة أو نشرات	1 - www.Elisevier. com/	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Reactivity, Atomic and Molecular Weights	1	a1	b1		d1
Stoichiometry: Chemical Formulas and Equations: Empirical Formulas from Analyses, •Quantitative Information from Balanced Equations, Limiting Reactants, Solution Composition	2	a1	b1		d1
Electronic Structure of Atoms: The Wave Nature of Light, Bohr	3	a1-2	b1-2		d1
Quiz + Electronic Structure of Atoms: Electron Configurations	4	a1-2	b1-2		d1-2
Electronic Structure of Atoms: Development of the Periodic Table	5	a1-2	b1-2		d1-2
Periodic Properties of the Elements	6	a1-2	b1-2		d1-2
Basic Concepts of Chemical Bonding:Lewis Symbols and the Octet Rule	7	a1-2	b1-2		d1-2
Quiz + Drawing Lewis Structures, Resonance Structure, Exceptions to the Octet Rule	8	a1-3	b1-2		d1-2
Molecular Geometry and Bonding Theories: Molecular Geometries	9	a1-3	b1-3	c1-c4	d1-3
The VSEPR Model, Polarity of Molecules	10	a1-3	b1-3		d1-3
Hybrid Orbitals, Multiple Bonds	11	a1-3	b1-3		d1-3
Quiz + Molecular Orbital Theory	12	a1-3	b1-3		d1-3
practical	1-12			c1-c3	

أستاذ المادة : أ.د. عبد المنعم محمودعبيدو **رئيس مجلس القسم العلمي :ا.د/ سالم السيد سمرة**

جامعة : المنصـــورة
كـــلية : الحقـــــوق
قسم: القانون المدني

توصيف مقرر دراسى

١ بيانات المقرر		
الرمز الكودى : ع ١٠٣	**أسم المقرر:** **Human Rigths**	**المستوى: الأول**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢ تمارين ٠ عملى ٠**	

٢ هدف المقرر:	**For students undertaking this course, the aims are to:** 1- Introduce some basic concepts of human rights. 2- Introduce the fundamental information about the social and economic rights. 3 - Study the human rights in Islam religion. 4 - Learn the essential conceptions of international concepts of human rights. 5 - Acquire students the right of fairing justice. 6- Develop scientific approaches that meet community needs considering economic, environmental, social, ethical, and safety requirements.
٣ المستهدف من التدريس المقرر:	
ا.المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1. Explain the basic concepts of human rights. a2. Recognize the main protecting human rights. a3. Discuss the human rights in Islam religion. a4. Know mechanisms of human rights protections. a5. Know how human rights achieved in economics field and social.
ب.المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1. Apply the basic concepts of human rights. b2. Distinguish different types of the social and economic human rights. b3. Apply the human rights in Islam religion and international legislation.
ج- المهارات المهنية الخاصة بالمقرر:	**c- Professional and Practical Skills:** **On completing this course, students will be able to:** c1. Apply techniques and tools considering scientific ethics.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1. Work effectively individually or as part of a team. d2. Analyze and find effective solutions for problems. d3. Consider community linked problems, ethics and traditions. d4. Deal with scientific patents considering property right.
٤ محتوى المقرر:	– 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
٥ اساليب التعليم والتعلم:	*5 - Teaching and Learning Methods* 5.1 - Lectures (2 hours). 5.2 - Reports and discussion groups.

The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦ أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:

٧ تقويم الطلاب :

أ- الأساليب المستخدمة :

7 - Student Assessment Methods

Written exam.	**to assess**	**al-a5, bl,b2,b3**
Reports	**to assess**	**c1,dl,d2,d3,d4**

ب- التوقيت :

Assessment Schedule

Assessment 1	**Week #**	**14**
Assessment 2	**Week #**	**10**

ج- توزيع الدرجات :

Weighting of Assessments

Final-Term Examination	**100**
Oral Examination	**0**
Practical Examination	**0**
Semester work	**0**
Other types of assessment	**0**
Total	**100%**

٨- قائمة الكتب الدراسية والمراجع :

Course Notes Mansoura University Human rights	**أ- مذكرات:**
	ب- كتب ملزمة
Rebecca Wallace, International human rights, London, Sweet & Maxwell, 1997.	**ج- كتب مقترحة :**
www.un.org/rights/hr	**د- دوريات علمية أو نشرات..**

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Identification of human rights and its international importance	**1-4**	**a1,a2**	**b1,b2**	**c1**	
Types of human rights	**5-8**	**a1,a2**	**b1,b2**	**c1**	**d1,d3**
Human rights in Islam religion and comparative legislation	**9-11**	**a3,a5**	**b3**	**c1**	**d1,d4**
Mechanisms of human rights protection	**12-14**	**a1,a2,a4**	**b1,b2**	**c1**	**d2**

أستاذ المادة: د. عبد الله محمد عبد الله الهوارى

رئيس مجلس القسم العلمى: رئيس قسم القانون المدني بكلية الحقوق

توصيف مقرر دراسي

جامعة : المنصورة
كليـة : العـــــلوم
قســم : الرياضيات

١ـ بيانات المقرر		
الرمز الكودى : Math 112	**أسم المقرر:Differential & Integral Calculus**	**المستوى: الأول**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢ تمارين ٢ عملى ٠**	

For students undertaking this course, the aims are to: 1 - provide a firm foundation in the concepts and techniques of the calculus, including real numbers, standard functions, curve sketching, limits, continuity, differentiation, integration of functions of one variable. The core concepts of limits, differentiation and integration are revised. Techniques for applying the calculus are developed and strongly reinforced.	**٢ـ هدف المقرر :**
٣ـ المستهدف من تدريس المقرر	
a- Knowledge and Understanding : **On completing this course, students will be able to:** a1- be familiar with the idea of a domain of definition and an inverse function a2- be familiar with elementary functions, the basic rules of the differential and integral calculus for functions of one variable; a3- ensure familiarity with methods of differentiation, Integration and their applications in problems a4- evaluate and manipulate derivatives and integration	**أـ المعلومات و المفاهيم :**
b- Intellectual Skills: **On completing this course, students will be able to:** b1- introduce rigorous mathematical treatments of some fundamental topics in mathematics b2- be comfortable with proofs by differentiation, integration of functions of one variable	**ب المهارات الذهنية:**
c-Professional and Practical Skills **On completing the course students will be able to:** c1- Understand the basic concepts and results in calculus. c2- Introduce techniques for solving simple differential equations c2- apply the given general results to particular cases.	**جـ المهارات المهنية الخاصة بالمقرر :**
d-General and Transferable Skills **On completing the course students will be able to:** d1- Work effectively both in team and independently d2- Mathematical techniques for application in the physical sciences d3- problem solving d4- Use Internet and library	**دـ المهارات العامة :**
1- Numbers and Functions 2- Limits and continuity. 3- Differentiation: (Basic ideas; tangent of curve; the product and quotient rule; the chain rule); higher derivatives 4- Derivatives of trigonometric functions and their inverse 5- Derivatives of the log function and in function; the exponential function 6- Derivatives of hyperbolic functions and their inverse and Applications of derivatives(normal and Tangent line)	**٤ـ محتوى المقـــرر**

7- Integration and Techniques of Integration: (Integration by substitution- Integration of trigonometric and hyperbolic functions - Integration of parts - Integration of rational functions by partial fractions) 8- Application of integration	
1 - Lectures (2H/W) 2 - Tutorial (2H/w)	٥- أســاليــب التعليـــم و التعلـم
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطــلاب ذوى القـدرات المحـدودة
٧- تقويـــــم الطـــلاب :	

1 - Final examination	to assess	a1,a2,a3,a4, b2,c1-c3 ,d2, d3	أ- الأساليب المستخدمة
2 - Oral examination	to assess	a2,b1,b2,d1,d4	
3- Mid_Term Examination	to assess	a1- a2,b1,b2,c1-c3,d1,d4	
1 - Final examination	week	15	ب- التوقيت
2 - Oral examination	week	15	
3- Mid_Term Examination	week	7	

	Final-Term Examination	80%
	Oral Examination	10 %
	Practical Examination	0%
	Mid-Term Exam	10%
	Other types of assessment	0%
	Total	100%

ج- توزيع الدرجات

٨- قائمة الكتب الدراسية و المراجع :	
Lecture Notes	أ- مذكرات:
1 - Howard Anton, Calculus, John Wily & Sons, INC 1999 2 - James Stewart, Calculus: Early Transcendentals, 5th ed., Brooks Cole (2002) 3 - Crowell, B. "Calculus" Light and Matter, Fullerton. Retrieved (2003). 4 - Keisler, H. J."Elementary Calculus: An Approach Using Infinitesimals (2000).	ب- كتب ملزمة
1 - Jordan, D.W. & Smith, P. Mathematical Techniques: An introduction for the engineering, physical, and mathematical sciences (3rd edition), Oxford University Press, Oxford, 2002 2 - James Stewart, Calculus, Early Transcendentals, Thomson, 5th Edition, International Student Edition, 2003. 3 - Donald A. McQuarrie (2003). Mathematical Methods for Scientists and Engineers, University Science Books. ISBN 9781891389245 4 - P.J. Eccles, An Introduction to Mathematical Reasoning: Numbers, Sets and Functions, Cambridge University Press, 1997.	ج- كتب مقترحة :
1 - http://en.wikipedia.org/wiki/Calculus 2 - http://www.math.niu.edu/~beachy/aaol / 3 - http://www.sosmath.com/calculus/calculus.html	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Numbers and Functions	1	a1	b1	c1	d1
Limits and continuity.	2	a1	b1	c1	d1, d3
Differentiation: (Basic ideas; tangent of curve; the product and quotient rule; the chain rule); higher derivatives	3-4	a2, a3	b1, b2	c1	d1, d3
Derivatives of trigonometric functions and their inverse	5-7	a2, a3	b2	c2	d1, d3
Derivatives of the log function and ln function; the exponential function	8	a2, a3	b2	c2	d1,d2,d3
Derivatives of hyperbolic functions and their inverse and Applications of derivatives(normal and Tangent line)	9	a2, a3	b2	c4	d1,d3,d4
Integration and Techniques of Integration: (Integration by substitution-Integration of trigonometric and hyperbolic functions - Integration of parts - Integration of rational functions by partial fractions)	10-12	a3, a4	b2	c3	d1, d3
Application of integration	13	a3, a4	b2	c4	d1- d4

أستاذ المادة : أ.د. / محمد السيد ابراهيم الشافعى

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١- بيانات المقرر		
الرمز الكودى :Math 122	**أسم المقرر: Mechanics 2**	**المستوى: الأول**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢- هدف المقرر :	**For students undertaking this course, the aims are to:** 1 - Introduce the basic principles of mechanics. 2- Develop mathematical tools for the solution of simple problems in kinematics and kinetics. 3-Illustrate the ideas of mechanics by applying them to certain key problems.
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Understand and be able to apply Newton's laws to simple problems in particle dynamics a2- Be with notions in mechanics, such as oscillations, circular motion and impulse and collisions a3- Know and understand the motion on conical pendulium
ب- المهارات الذهنية :	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Solve problems on the equilibrium of systems b2- Apply the second law of Newton for the motion in plane using polar coordinates b3- Find the shearing forces as well as the bending moments b4- Apply the virtual work principle on mechanical systems
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Use logical steps in solving problems c2- Solve mechanical problems analytically c3- Model real practical application
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Benefit from developing his problem solving skills, modelling skills, logical thought and analysis d2- Use Internet and Library efficiently d3- Problem solving d4- Work in a team
٤- محتوى المقرر :	1 - Motion of particle in a straight line 2- Motion in a resisting medium 3- Motion of bodies having variable mass (Motion of Rockets(4- Shearing forces and bending moments 5- Mechanical system-Virtual work principle 6- Impulse, impulse forces and impact of elastic bodies 7 - Circular Motion

1 - Lectures (2H/W) 2 - Tutorial (2H/w)	٥- أســاليــب التعليـــم و التعلـم
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة
٧- تقويـــــم الطـــلاب :	

1- Final examination 2- Oral examination 3- Mid_Term Examination	to assess to assess to assess	a1-a3, b1-b4, d1-d4 a1-a3 a1-a3, b1-b4, d1-d4	أ- الأساليب المستخدمة
1- Final examination 2- Oral examination 3- Mid_Term Examination	week week week	15 15 7	ب- التوقيت

Weighting of Assessments

Final-Term Examination	80%
Oral Examination	10 %
Practical Examination	0%
Mid-Term Exam	10%
Other types of assessment	0%
Total	100%

ج- توزيع الدرجات

٨- قائمة الكتب الدراسية و المراجع :	
1 - departmental course notes	أ- المذكرات
1 - An Introduction to Mechanics, D. Kleppner & Robert J. Kolenkow, McGraw-Hill, 1973 2 - Basaly, W. A. Dynamics of particles and rigid bodies , 1969 (in Arabic)	ب- الكتب ملزمة
1- Targ. S., Theoretical Mechanics A Short Course, English Translation, Mir publisher , 1976 . 2- Loney S. L. Dynamics of particles , Cambridge, 1960	ج- كتب مقترحة
1- http://ia.wikipedia.org/wiki/Dynamica	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

للمقـــرر المحتويـــات	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Motion of particle in a straight line	1-3	a1- a3	b1	c1- c3	d1,d3,d4
Motion in a resisting medium	4-5	a1- a3	b1, b2	c1- c3	d1,d3,d4
Motion of bodies having variable mass (Motion of Rockets)	6-7	a1- a3	b3, b4	c1- c3	d1,d3,d4
Shearing forces and bending moments	8-9	a1- a3	b3, b4	c1- c3	d1-d4
Mechanical system-Virtual work principle	10-11	a1- a3	b3, b4	c1- c3	d1-d4
Impulse, impulse forces and impact of elastic bodies	12	a1- a3	b3, b4	c1- c3	d1-d4
Circular Motion	13	a1- a3	b3, b4	c1- c3	d1-d4

أستاذ المادة : د. الشحات عبد العزيز محمد صالح

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة: المنصورة
كـــلية: العلـــــوم
قـــســـم: الفيزيـــاء

١ ـ بيانات المقرر		
الرمز الكودى :Phys 103	أسم المقرر: Electric Circuits	المستوى: الأول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢	

٢ ـ هدف المقرر:	**For students undertaking this course, the aims are to:** 1-Study the principle connection of coil and capacitance with electric source. 2- Outline of the basic information of impedance and inductance. 3- Develop a clear understanding of the basic concepts of electric circuits. 4- Explain the applications of the electric circuits.
٣ ـ المستهدف من التدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Define the basic circuit components. a2- Explain the principle of electric circuits. a3- Understand the phase diagram of electric circuits.
ب- المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1 - Know more information about circuit parameters, Average and effective values b2 - Sketch graphically complex impedance and phase notation. b3 - Analyze electric circuits. b4 - Explain the principle of Mech current network analysis Node voltage Network analysis
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1 - Perform an experiment for some electric circuits. c2- Use mathematical formula in solving challenging problems related to electric circuits. c3 -Design a diagram graphically for electric circuits .
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Collect information's about subject. d2- Collect and analyze the database of information related to different subjects. d3- Solve problems.
٤ ـ محتوى المقرر:	– Definitions and circuit parameters, Average and effective values – Sinusoidal current and voltage – Complex impedance and phase notation, Series and parallel Circuits – Power and power factor correction, series – Mech current network analysis – Node voltage Network analysis – Mutual inductance – Fourier Method of waveform analysis
٥ ـ اساليب التعليم والتعلم:	**5-Teaching and Learning Methods** • Lectures using overhead projector and board. • Discussion sessions

• Problem classes and group tutorial. • Class activity. • Laboratory work	
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:

٧- تقويم الطلاب :

أ- الأساليب المستخدمة :	Final exam	to assess	a1-a3, b1-b4,c1,d3
	Oral exam	to assess	a1-a3, b1 ,b3
	Practical exam	to assess	a1-a3,d1,c1,c3
	Mid-Term Exam	to assess	a1-a3, b1-b4,c1,d3

ب- التوقيت :	Final exam	Week #	16
	Oral exam	Week #	16
	Practical exam	Week #	15
	Mid-Term Exam	Week #	8

ج- توزيع الدرجات :	Final-Term Examination	60%
	Oral Examination	10 %
	Practical Examination	20%
	Semester work	10%
	Total	100%

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:	– Notes offered by the physics department
ب- كتب ملزمة	
ج- كتب مقترحة :	-Raymond A. Serway ,Physics for Scientists and Engineers ,John W. Jewett 6th Edition, 2004. -Hallidy, Resnick and Krane ,Physics, Sixth edition, John Wiley &Sons, 2003.
د- دوريات علمية أو نشرات..	http://en.wikipedia.org

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Definitions and circuit parameters, Average and effective values	1-2	a1-a3	b1	c1	d1
Sinusoidal current and voltage	3-4	a1-a3	b1	c1	
Complex impedance and phase notation, Series and parallel Circuits	5-6	a1-a3	b1	c1,c2	d3
Power and power factor correction, series	7-8	a3	b2		d2
Mech current network analysis	9-10	a3	b2	c1-c3	d2-d3
Node voltage Network analysis	11-12	a3	b3		d2-d3
Mutual inductance	13-14	a3	b4		d3
Fourier Method of waveform analysis	15	a3	b4	c3	d2-d3

أستاذ المادة: د./ عزيزة عطا عبد العزيز

رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق

جامعة: المنصورة
كـــلية: العلـــــوم
قـــســـم: الفيزياء

توصيف مقرر دراسى

١- بيانات المقرر		
الرمز الكودى :Phys 104	أسم المقرر: Electromagnetic Theory	المستوى: الأول
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢	

١- هدف المقرر:	**For students undertaking this course, the aims are to:** 1- Introduce the principles of the bases of the electromagnetic theory from the definitions of the electrostatic and electromagnetic fields and Maxwell's equations for steady-state. 2- Study the varying-time effects of the electromagnetic fields and Maxwell's equations in time-dependent case. 3- Outline the basic information of the electromagnetic waves and their propagation in media.
٢- المستهدف من تدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Introduce the principles of vector analysis and Coulomb's law and electric field. a2-Outline the basic information of electrostatic potential and electrostatic dipole. a3-Introduce the basic concepts of dielectric polarization, Poisson and Laplace equations for magnetic potentials, Electromagnetic induction and Faraday's law a4-Introduce the principles of Maxwell's equations and Electromagnetic wave equations. a5-Introduce the principles of Electromagnetic plane wave propagation.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1-Know more information about vector analysis and Coulomb's law and electric field. b2-Define the physial terms like vector analysis, Coulomb's law and electric field and electrostatic potential and electrostatic dipole. b3-Explain the principles of dielectric polarization, Poisson and Laplace equations for magnetic potentials, Electromagnetic induction and Faraday's law. b4 -Derive Maxwell's equations, Electromagnetic wave equations and Electromagnetic plane wave propagation.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Choose and classify data obtained from physics experiments. c2-Design physics experiments to apply electrostatic potential and electrostatic dipole. c3-Design a diagram graphically for dielectric polarization, Poisson and Laplace equations for magnetic potentials, Electromagnetic induction and Faraday's law. c4-Use mathematical formula in solving problems related to Maxwell's equations, Electromagnetic wave equations and Electromagnetic plane wave propagation.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:**

d1-Search for information about the vector represenations to model a physical problem in mathematical form. d2-Solve the problems of different equation of electric and magnetic potentials. d3-Work effectively both in a team and independently on solving Maxwell's equations problems in fifferent media. d4-Collect and analyze the data using the internet.	
Vector analysis Coulomb's law and electric field Electrostatic potential Electrostatic dipole Dielectric polarization Poisson and Laplace equations for magnetic potentials Electromagnetic induction and Faraday's law Maxwell's equations Electromagnetic wave equations Electromagnetic plane wave propagation	٣- محتوى المقرر:
5-Teaching and Learning Methods 1- Lectures using data show and board 2-Collecting data about scientific subject 3-Discussion sessions and class activity 4-Problem classes and group tutorial	٤- اساليب التعليم والتعلم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٥- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:
	٦- تقويم الطلاب :

أ- الأساليب المستخدمة :

Final exam	to assess	a1-a5, b1-b4, c1-c4, d2-d3
Oral exam	to assess	a1-a5, b1-b4 and c1-c4
Practical exam	to assess	a1-a3, b1-b2,c1-c3,d1,d3,d4
Mid-Term Exam	to assess	a1-a5, b1-b4, c1-c4, d2-d3

ب- التوقيت :

Final exam	Week	16
Oral exam	Week	16
Practical exam	Week	15
Mid-Term Exam	Week	8

ج- توزيع الدرجات :

Final-Term Examination	60%
Oral Examination	10 %
Practical Examination	20%
Mid-Term Examination	10%
Total	100%

٨- قائمة الكتب الدراسية والمراجع :

Department Notes on "Electromagnetic Theory"	أ- مذكرات:
	ب- كتب ملزمة
- P. Herbert ,Neff Jr, Introductory Electromagnetic, John Wiley & Sons, Singapore, 1991 -T. D. J. Griffiths, Introduction to Electrodynamics, Prentice-Hall, New Jersey,1999 - Reitz, John R. and Milford, Frederick J, Foundations of Electromagnetic theory , 2nd ed. Addison-Wesley, Reading, Massachusetts, USA, 1967. - Reitz, John R. and Milford, Frederick J,Applied Electromagnetic, The Macmillan	ج- كتب مقترحة :

Press Ltd., London and Basingstoke, Great Britain,1967 - Frankl, Daniel R,Electromagnetic Theory, Prentice-Hall, Englewood Cliffs, New Jersey, USA, 1986	
http://en.wikipedia.org	**د- دوريات علمية أو نشرات..**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Vector Analysis	1-2	a1	b1-b2		d1
Coulomb's law and electric field	3-4	a1	b1-b2	c1	d1
Electrostatic potential	5	a1	b3	c2	d1,d2
Electrostatic dipole	6	a2	b3	c3	
Dielectric polarization	7	a2	b3		d1,d2
Poisson and Laplace equations for magnetic potentials	8	a3	b3		
Electromagnetic induction and Faraday's law	9	a2	b3		
Electromagnetic induction and Faraday's law	10	a3	b3	c3	
Maxwell's equations	11-12	a4	b4	c4	d3
Electromagnetic wave equation	13	a4	b4		
Magnetic plane wave propagation	14-15	a5	b4		d4

أستاذ المادة: د./ عبير عوض محمود

رئيس مجلس القسم العلمي : أ.د./ المتولى محمود عبد الرازق

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العـــــلوم
قســم : الكيميـــاء

١- بيانات المقرر		
الرمز الكودى :Chem 141	**أسم المقرر: أسس الكيمياء الفيزيائية**	**المستوى: الأول**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٢**	

٢- هدف المقرر :	**For students undertaking this course, the aims are to:** 1 - Develop the fundamental principles of chemistry and their applications 2 - Introduce the principles of gas laws and properties of gases. 3 - Outline the basic information of thermochemistry and thermochemical laws. 4 - Introduce the principles of solution chemistry and the properties of solution. 5 - Outline the basic information of chemical equilibrium and ionic equilibrium
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Explore the relation between pressure, temperature and volume to form different gas laws. a2 - Learn the basics of thermochemistry. a 3- Learn how to interpret graphical representations of physical phenomenon for gases and solution. a4 - Know the principles of solution chemistry. a5- Learn the principles of chemical equilibrium and the factors affecting the equilibrium state for chemical reactions a6 - Explore the Ionic equilibrium and know the relation between pH and pOH and the effect of salt effect and common ion effect on the solubility of sparingly soluble salts.
ب- المهارات الذهنية :	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- derive equations for gas properties b2- uses the principles thermochemistry to solve classical elementary problems b3 - use the principles of solution chemistry to solve problems for finding the concentration of solutions. b4 - apply principles of chemical equilibrium to common chemical reactions. b5 - apply the salt effect and common ion effect on the solubility of sparingly soluble salts.
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1 - describe the various properties of gases c2 - use the thermochemical equations a to determine different thermochemical parameters. c3 - use various relations to prepare solutions with different concentrations c4 - calculate the equilibrium constant for common chemical reactions
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1 - use computer and internet to collect date about scientific topics d2 - communicate with others and express what he understand. d3 - use the computer and software for making presentations

1- Gas laws **2-** Kinetic theory of gases and real gases **3-** Thermochemical equations, Hess law, Heat of combustion and heat of formation **4-** Heat capacities and bond energies **5-** Solutions, different ways to express concentration of solutions **6-** Collegative properties **7-** Chemical equilibrium and calculating the equilibrium constant **8-** Lechatlier Principle and application to chemical reactions at equilibrium **9-** Ionic Equilibrium, Acids and Bases and Buffer solution **10-** Salt effect, common ion effect and solubility of sparingly soluble salts **11-** practical	**- محتوى المقرر :**
5.1 - Lecture using white board. 5.2 - data show and internet.	**٥- أساليب التعليم و التعلم**
6.1 - The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة**
٧- تقويم الطلاب :	
1 - quizzes to assess a1-a5,b1,-b5,c1,-c4 2 - home work assignments to assess a1-a5,b1,-b5,c1,-c4 3 - practical exam to assess c1,-c4 4 - semester work to assess a1-a5,b1,-b5,c1,-c4 5 - final exam to assess a1-a5,b1,-b5,c1,-c4 6 - oral exam to assess a1-a5,b1,-b5,c1,-c4 7 – report to assess d1,d3	**أ- الأساليب المستخدمة**
Assessment quizzes week4,8,12 Assessment home work exam week every lecture Assessment practical exam week12 Assessment semester work week during the term Assessment final exam week14 Assessment oral exam week14 Assessment report week10	**ب- التوقيت**
Mid-term Examination 10 % Final Term Examination 60 % Oral Examin ation 10 % Practical Examination 20 % Semester work 0 % Other types of assessment 0 % Total 100%	**ج- توزيع الدرجات**
٨- قائمة الكتب الدراسية و المراجع :	
	أ- مذكرات:
1 - Physical Chemistry 2 - Physical chemistry, Peter Atkins, Juli de Paula, Oxford University Press, New York, Oxford, 2006.	**ب- الكتب ملزمة**
1 - Elements of physical chemistry, Atkins, P. W., Publisher: W.H. Freeman, Oxford University Press, New York, 2005.	**ج-كتب مقترحة**
1 - www.google.com	**د- مواقع انترنت**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Gas laws.	1,2	a1,a3	b1	c1	d1
Kinetic theory of gases and real gases.	3	a1,a3	b1	c1	d1
Thermochemicl equations, Hess law, Heat of combustion and heat of formation.	4,5	a2	b2	c2	d1
Heat capacities and bond energies.	6	a2	b2	c2	d1
Solutions, different ways to express concentration of solutions.	7	a3,a4	b3	c3	d3
Collegative properties.	8	a3,a4	b3	c3	d3
Chemical equilibrium and calculating the equilibrium constant.	9	a5	b4	c4	d3
Lechatlier Principle and application to chemical reactions at equilibrium.	10	a5	b4	c4	d3
Ionic Equilibrium, Acids and Bases and Buffer solution	11	a6			d2
Salt effect, common ion effect and solubility of sparingly soluble salts	12	a6	b5		d2
practical physical chemistry	1-10			c1-c4	

أستاذ المادة : أ.د. / عصام عرفه حسن

رئيس مجلس القسم العلمي أ.د. / سالم السيد سمرة

جامعة : المنصورة
مركز تدريس اللغة الانجليزية

توصيف مقرر دراسى

١-بيانات المقرر		
الرمز الكودى : ع ١٠٢	أسم المقرر: **English Language**	**المستوى:الأول**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ٠**	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** - Use English language effectively, particularly. Also using academic and technical terms and expressions in writing.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a-Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Recognize the use of some words in different contexts a2 -Identify some scientific terms and expressions a3 - Acquire academic topics to answer comprehension questions and to write academically.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1 - Analyze different view points. b2- Synthesize information from different sources b3- Draw conclusions about academic topics.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- acquire the skills of writing, reading and speaking English. c2 - make a dialouge and communication with others.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- use information and communication technology effectively. d2- acquire self- and long life–learning.
٤- محتوى المقرر:	- Types of common rocks - Writing paragraph + topic sentence - Countable and non-countable nouns - Animal cell structure -Punctuation - The use and non-use of articles + using a Relvative clause - Solar energy - Cohesion + signaling -Subject verb agreement + Quit & Rather - Lightining
٥- اساليب التعليم والتعلم:	**5-Teaching and Learning Methods** 1- Group tutorial. 2- Home works reports and discussion group. 3- Lectures using data show and board.
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧- تقويم الطلاب :

أ- الأساليب المستخدمة :

Final exam	**to assess**	a1,a2,a3,b1,b2,b3
Oral exam	to assess	a1,a2,a3,b1,b2,b3,c1,c2
Report	to assess	d1,d2

ب- التوقيت :

Assessment 1	Week #	14
Assessment 2	Week #	14
Assessment 3	Week #	12
Assessment 4	Week #	10

ج- توزيع الدرجات :

Final-Term Examination	90%
Oral Examination	10 %
Practical Examination	0%
Semester work	0%
Other types of assessment	0%
Total	100%

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:

- A book issued by ESPRC – Mansoura University

ب- كتب ملزمة

ج- كتب مقترحة :

English Grammar, Successful Writing , Foundation of Writing and Physical Science.

د- دوريات علمية أو نشرات..

http://www.hugosite.com/
http://st-takla.org/Learn_Languages/03_Learn-English-Lessons-Taaleim-engelizy-Free/Learn-English_00-Index-El-Fehres-04.html

١- مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
types of common rocks	1	a1-a3	b1,b2	c2	d1,d2
writing paragraph + topic sentence	2-3		b1,b2	c1,c2	d1,d2
countable and non-countable nouns	4	a1-a3	b1,b2	c2	d1,d2
Animal cell structure	5	a1-a3	b1,b2	c2	d1,d2
punctuation	6			c1	d1,d2
the use and non-use of articles + using a relvative clause	7-8		b1,b2	c2	d1,d2
solar energy	9	a1-a3	b1,b2	c2	d1,d2
Cohesion + signaling	10	a1-a3	b1,b2	c2	d1,d2
Subject verb agreement + Quit & Rather	11		b1,b2	c2	d1,d2
lightining	12	a1-a3	b1,b2	c2	d1,d2

أستاذ المادة : سحر فايز عيد حنا الطحان

رئيس مجلس القسم العلمي : د .على محمد على مصطفى

المستوى الثانى

توصيف مقرر دراسي

جامعة : المنصورة
كليـة العلـــــوم
قســم : الرياضيات

١ ـ بيانات المقرر		
كود المادة : Math 212	**اسم المقرر : Abstract Algebra (1)**	**المستوى: الثانى**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢ : تمارين: ٢ عملى: ٠**	

٢ ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- Introduce the basic ideas of groups and rings with a good range of examples so that the student has some familiarity with the fundamental concepts of abstract algebra and a good grounding for further study. As a prerequisite to the abstract algebra 2which will in given be the third year for mathematicians.
٣ ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1- Understand the basic definitions and theories of groups and rings. a2- know the basic concepts of algebra such as subgroups , cyclic groups, finite groups, rings, fields. a3 – familiar with the algebraic structures of factor groups and factor rings. a4 – be aware of the relation between algebraic structures
ب ـ المهارات الذهنية :	**b- Intellectual Skills**: **On completing this course, students will be able to:** b1- Find the structures of all finite groups of small orders. b2- Apply the basic concepts of normal subgroups and ideal to find a new structures such as factor and factor ring groups. b3- develop self-awareness and general study skills on the relation between groups and rings
ج ـ المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills :** **On completing this course, students will be able to:** c1 - Handing-in of homework and attendance at tutorials described in the second Year Handbook. c2 - Solving some simple problems in groups and rings
د ـ المهارات العامة :	**d-General and Transferable Skills :** **On completing this course, students will be able to:** d1- Use Internet and Library to get information d2- Problem solving d3- Team work
٤ ـ محتوى المقرر :	• Maps, kinds of maps, operations, groupies and all essential kinds of groupies • Groups and subgroups and its properties • Cyclic groups. • Symmetric groups and permutation groups • Normal subgroups and factor groups • Homomorphism theorems of groups and Automorphisms group. • Direct product and inner product of groups. • P-Groups and Sylow Theorems. • Rings and fields.

٥- أساليب التعليم و التعلم	1- Lectures (2H/W) 2- Tutorials (2H/w)
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess a1,a2, b2,b1,c2, d1, d3 2- Mid-Term Examination to assess a1, a2, b1,b2,c1 3- Final exam to assess a1,a2,a3,a4,b1,b2,b3,c1,c3,d2
ب- التوقيت	1- Oral week 14 2- Mid-Term Examination week 7 3- Final exam week 16
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% - Semester work 0% - Other types of assessment 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Lectures notes available in the Dept
ب- الكتب ملزمة	Elements of Abstract Algebra
ج- كتب مقترحة	1- Abstract Algebra, by John A. Beachy and William D. Blair. 2- John B. Fraleigh,A first course in Abstract algebra, Addidon-Wesley
د- دوريات علمية أو نشرات ... الخ	http://joshua.smcvt.edu/linearalgebra/ http://www.math.unl.edu/~tshores1/linalgtext.html http://www.math.niu.edu/~beachy/aaol/

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Maps, kinds of maps, operations, groupies and all essential kinds of groupies	**1**	a1, a2	b1	c1, c2	d1-d3
Groups and subgroups and its properties	**2-3**	a1,a2,a4	b1	c1, c2	d1-d3
Cyclic groups.	**4-5**	a1,a2,a4	b1	c1, c2	d1-d3
Symmetric groups and permutation groups	**6**	a1,a2,a4	b1, b2	c1, c2	d1-d3
Normal subgroups and factor groups	**7**	a1-a4	b1, b2	c1, c2	d1-d3
Homomorphism theorems of groups and Automorphisms group.	**8-9**	a1-a4	b1, b2	c1, c2	d1-d3
Direct product and inner product of groups.	**10-11**	a1-a4	b1, b2	c1, c2	d1-d3
p-Groups and Sylow Theorems.	**12**	a1-a4	b2	c1, c2	d1-d3
Rings and fields.	**13**	a1-a4	b3	c1, c2	d1-d3
Review	**14**				

أستاذ المادة : د. صالح المهدى

رئيس مجلس القسم العلمى : ا.د. مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العـــــلوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 214	**اسم المقرر :** **Ordinary Differential Equations**	**المستوى: الثانى**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- provide an overview of standard methods for the solution of single ordinary differential equations and systems of equations, with an introduction to some of the underlying theory and calculus of functions of more than one variable.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 – be familiar with some of the standard methods for solution of first- and second-order ordinary differential equations a2 - be aware of the implications of existence and uniqueness theorems a3 - Understand continuity and differentiability of functions of two or more variables. a4- Understand the applications of differential equations
ب- المهارات الذهنية:	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- Critically think and compare different approaches to the same problem b2- develop skills in the use of computer tools for solving differential equations and integration b3- Use logical and intellectual skills b4- apply the basic skills of continuity and differentiability of functions of two variables.
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing this course, students will be able to:** c1 - Classify the first and second order ODEs c2 - Solve linear ODEs using standard methods. c3- pursue further studies in more advanced branches of modern mathematics: functional analysis, topology, optimization and nonlinear analysis
د- المهارات العامة:	**d-General and Transferable Skills** **On completing this course, students will be able to:** d1- Ability to work in team d2- Solving problems d3- Use Internet and library
٤ـ محتوى المقرر:	• Definitions. First order differential eq. linear, separable,exact and homogenous • Second order differential eq.: reduction of order, constant coeff., 2nd -order linear eq. Euler's eq • Laplace transformation • Series solutions of 2nd-order linear differential eq. • Power series, solutions about an ordinary point • Equal roots of indicial eq. and roots differing by an integer

	• Introduction to systems of first-order eq. solutions of two linear first-order eq
٥- أســـاليـــب التعليـــم و التعلـم :	1- Lectures (4H/W) 2- Tutorials (3H/w)
٦- أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess b1-b3,d1-d3 2- Mid-Term Examination to assess a1, a2, b1,b2,c1 3- Final exam to assess a1-a4,b4, c1-c3
ب- التوقيت	1. Oral week 15 2. Mid-Term Exam week 7 3. Final exam week 15
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Lectures notes available in the Dept
ب- الكتب ملزمة	- C. H Edwards, Elementary differential equations with boundary value problems, Pearson Prentice Hall, 2004
ج- كتب مقترحة	1- W.E. Boyce & R.C. Di Prima, "Elementary Differential Equations and Boundary Value Problems", Wiley 2- M. Braun, "Differential Equations and their Applications", Springer-Verlag. 3- C.H. Edwards & D.E. Penney, "Elementary ifferential Equations with Boundary Value Problems", Prentice Hall. 4- R.K. Nagle & E.B. Saff, & A.D. Snider, "Fundamentals of Differential Equations and Boundary Value Problems", Addison-Wesley.
د- دوريـــات علميـــة أو نشرات	http://www.sosmath.com/diffeq/diffeq.html

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Definitions. First order differential eq.: linear, separable, exact and homogenous	1-2	a1, a4	b1,b2,b3	c1-c3	d2, d3
Second order differential eq.: reduction of order, constant coeff., 2nd -order linear eq. Euler's eq	3-4	a1,a2,a4	b1,b2,b3	c1-c3	d2, d3
Laplace transformation	5-6	a1, a4	b1,b2,b3	c1-c3	d2, d3
Series solutions of 2nd-order linear differential eq.	7-8	a1	b1,b2,b3	c1-c3	d1, d2,
Power series, solutions about an ordinary point	9-10	a1, a2	b2	c1-c3	d2,
Equal roots of indicial eq. and roots differing by an integer	11-12	a2, a3	b1,b2,b3	c1-c3	d1, d2
Introduction to systems of first-order eq. solutions of two linear first-order eq.	13-14	a1,a2,a3	b4	c1-c3	d1, d2

أستاذ المقرر: أ.د. على شمندى

رئيس مجلس القسم العلمى : أ.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كليـة : العلـــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 216	اسم المقرر : Calculus of Several Variables	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - provide an overview of standard methods for the calculus of functions of more than one variable and Multiple and linear integrals
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **completing this course, students will be able to:** a1 - Understand continuity anddifferentiability of functions of two or more variables. a2 - Understanding some ideas about the Partial differentiation a3 - Understand the applications of Partial differentiation
ب- المهارات الذهنية :	**b- Intellectual Skills** **completing this course, students will be able to:** b1- Critically think and compare different approaches to the same problem b2- Use logical and intellectual skills b3- apply the basic skills of continuity and differentiability of functions of two variables. b4 - Continuity and differentiability of functions of two variables b5 - apply the basic techniques of Multiple and linear integrals
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **completing this course, students will be able to:** c1 - Solving some problems in advanced calculus
د- المهارات العامة :	**d- General and Transferable Skills** **completing this course, students will be able to:** d1 - Solving problems d2 - Ability to work in team d3 - Use Internet and library
٤ـ محتوى المقرر :	**Part 1 : Differential calculus of functions of several variables –** – Limits and continuity – – Partial derivatives – – Directional derivatives and the gradient - – Normal lines and tangent planes - Extreme – – Lagrange multipliers. **Part 2: Multiple Integrals-** – Double integrals in different spaces and their application- – Triple integrals in different spaces and their applications – – Transformation of coordinates – – Change of variables in multiple. **Part 3:** – Topics in vector Calculus-

– Line integrals and applications – – Green's Theorem – – Independent of path of line integrals in the plane and dimensional spaces – – Surface integrals – – The divergence Theorem – – Stock's Theorem.	
1- Lectures (2H/W) 2- Tutorials (2H/w)	٥- أساليب التعليم و التعلم :
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة
٧- تقويم الطلاب :	
1- Oral exam to assess b1-b3,d1-d3 2- Mid-Term Exam to assess a1-a3,b1-b3 3- Final exam to assess a1-a3,b1-b5,c1-c3	أ- الأساليب المستخدمة
1- Oral week 14 2-Mid-Term Exam week 7 3- Final exam week 15	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
Lectures notes available in the Dept	أ- المذكرات
- C. H Edwards, Elementary differential equations with boundary value problems, Pearson Prentice Hall, 2004	ب- الكتب ملزمة
1- W.E. Boyce & R.C. Di Prima, "Elementary Differential Equations and Boundary Value Problems", Wiley 2- M. Braun, "Differential Equations and their Applications", Springer-Verlag. 3- C.H. Edwards & D.E. Penney, "Elementary ifferential Equations with Boundary Value Problems", Prentice Hall. 4- R.K. Nagle & E.B. Saff, & A.D. Snider, "Fundamentals of Differential Equations and Boundary Value Problems", Addison-Wesley.	ج- كتب مقترحة
http://www.sosmath.com/diffeq/diffeq.html	د- دوريات علمية أو نشرات ... الخ

أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Part 1 :					
– Differential calculus of functions of several variables					
– Limits and continuity					
– Partial derivatives					
– Directional derivatives and the gradient					
– Normal lines and tangent planes Extreme					
– Lagrange multipliers					
Part 2:					
– Multiple Integrals					
– Double integrals in different spaces and their application					
– Triple integrals in different spaces and their applications					
– Transformation of coordinates					
– Change of variables in multiple					
Part 3:					
– Topics in vector Calculus					
– Line integrals and applications					
– Green's Theorem					
– Independent of path of line integrals in the plane and dimensional spaces					
– Surface integrals					
– The divergence Theorem					
– Stock's Theorem.					

أستاذ المقرر: د. محاسن أحمد ابراهيم موسى

رئيس مجلس القسم العلمى : أ.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 221	اسم المقرر : Mechanic 3	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - be familiar with the fundamental concepts of new topics of statics. - understand and interpret some physical phenomena such as hydrostatics. - understand the fundamental concepts of statistical mechanics.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **completing this course, students will be able to:** a1- know the rules of statics a2 – be aware of the notions of vector integration, and moment of inertia a3 – be familiar with the notion of attraction and potential and hydrostatics
ب- المهارات الذهنية :	**b- Intellectual Skills** **completing this course, students will be able to:** b1 –solve problems concerning the attraction and potentioal and hydrostatics**.** b2- evaluate the linear, surface and volume integrals**.**
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **completing this course, students will be able to:** c1- apply the Gauss, Stokes, and Green's theorem for finding definite multiple integrals. c2 – conduct mathematical analysis for a system representing the physical phenomenon under consideration (such as attraction and potentials for some bodies and hydrostatics) c3 - model real practical applications**.**
د- المهارات العامة :	**d-General and Transferable Skills** **completing this course, students will be able to:** d1- Use Internet and Library to get information d2- Work in a group d3- solve mechanical problems
٤- محتوى المقرر :	– Vectors integration(line, surface and volume integrals – Integral Theorems (Gauss, Stokes Green's), vector identities, conservative field, solid angle. – Attraction and potentials (and its applications). – Moment of inertia. – Introduction to hydrostatics. – Electro-statics (Attraction and Potential)
٥- أساليب التعليم و التعلم :	1- Lectures (2H/W) 2- Tutorials (2H/w)
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧- تقويـــــم الطـــلاب :	
1- Oral exam to assess a1-a3, b1- b2, d1-d3 2- Final exam to assess a1- a4,b1- b4,c1-c3 3- Mid-Term Exam to assess a1-a2,b1-b2,c1,c2	أ- الأساليب المستخدمة
1- Oral week 14 2- Final exam week 15 3-Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% - Semester work 0% - Other types of assessment 0% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
-Yehia H. M. Particle and rigid body dynamics (in Arabic)	أ- المذكرات
- A.S. Ramsey, Statics, Cambridge University Press (1988)	ب- الكتب ملزمة
Beer, Mechanics for Engineers, Statics, Mc Graw-Hill (1999)	ج- كتب مقترحة
http://en.wikipedia.org	د- دوريـــات علميـــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Vectors integration(line, surface and volume integrals	1-4	a1, a2	b1	c1, c2	d1, d2
Integral Theorems (Gauss, Stokes Green's), vector identities, conservative field, solid angle.	5-6	a1, a2	b2	c1, c2	d1, d2
Attraction and potentials (and its applications).	7-8	a3	b1	c1, c2	d1, d2
Moment of inertia.	9-11	a2	b2	c2	d1,d2,d3
Introduction to hydrostatics.	12-13	a2, a3	b2	c2-c3	d1,d2,d3

أستاذ المادة : د. عادل عبد العزيز

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 241	اسم المقرر : Computer science 2	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى:٢ تمارين: ٠ عملى: ٢	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** –Understand the basic concepts programming in c++ –Build programs in C++ language –Model problems in basic science using C++ programming –Understand programming algorithms to address proper mathematical problems –Use numerical methods in scientific programming and mathematical modeling
٣ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 – list computer terms from the textbook, lecture, and readings a2- Acquire an understanding of the fundamental programming concepts such as variables , functions , loops and subroutines in C++ a3 - Identify application algorithm and use programming language a 4 – Read and write programs of real world applications
ب ـ المهارات الذهنية :	**b- Intellectual Skills** **On completeing the course, the student is will be able to:** b1- Construct programming in C++ b2- Analyze code in C++ and adapt other people's code. b3- Create a detailed algorithmic solution to a well defined problem b4- Design program to solve application problem.
ج ـ المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing this course, students will be able to:** c1 – Use language C++ syntax in programming problems c2 – Make programs easy to use in market. c3 - Convert basic programs to equivalent C++ code; c4- Use C++ to develop more reliable programs
د ـ المهارات العامة:	**d-General and Transferable Skills** **On completing this course, students will be able to:** d1- Solve problems in number systems d2- Work effectively both in a team and independently d3- Exhibit the sense of beauty and neatness d4- Use information and communication technology effectively
٤ـ محتوى المقرر :	• Basic compilation of a C++ program & the various "bits" that make up a program. • The Basics of C++:input & output using cin & cout,built in data types such as int, double, char & bool and their relative sizes, The complex number type. • Control statements: if - else & switch. • Loops: for, while & do. • Header files & core C++. • Functions: including call be reference & overloading. • Arrays

• C++ mechanism for implementing Object Orientation. • functions. • Mathematical applications	
1- Lecturer 2- Practical tutorial 3- Report	٥- أســـاليـــب التعليـــم و التعلـم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحدودة
٧- تقويـــــم الطـــــلاب :	
1- Oral and Practical exam to assess b1-b4,d1-d4 2- Final exam to assess a1-a4, b1-b4, c1-c4 3- Mid-Term Exam to assess a1-a2, c1-c2 4 - Practical Examination to assess a1-a4, b1-b4, c1-c4	أ- الأساليب المستخدمة
1- Oral and Practical exam week 14 2- Final exam week 15 3-Mid-Term Exam week 7 4 - Practical Examination week 14	ب- التوقيت
- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
- Note the Dept	أ- المذكرات
B. H. Flowers, An Introduction to Numerical Methods in C++ , Oxford, 2000.	ب- الكتب ملزمة
C++ for mathematicians. An introduction for Students and Professionals. ,Edward Scheinerman Bjarne Stroustrup, *The C++ Programming Language, 3rd edition*, Addison-Wesley, 1997	ج- كتب مقترحة
http://www.mans.edu.eg/facscim/english/ECourses/Default.htm	د- دوريـــات علميـــة أو نشرات ... الخ

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Basic compilation of a C++ program & the various "bits" that make up a program.	1-3	a1	b1	c1	d1
The Basics of C++:	4-6	a2	b1	c1,c2	d2
Control statements: if - else & switch.loops: for, while & do.	7-8	a2,a3	b1	c3	d2
Header files & core C++.Functions: including call be reference & overloading.	9	a2,a3	b2	c2	d2
Arrays	10	a2,a4	b3	c3	d3
functions.	11	a2	b4	c4	d3
Mathematical applications	12-14	a2,a3,a4	b4	c4	d4

أستاذ المقرر:أ د / حمدى نبيه عجيزة **رئيس مجلس القسم العلمى : أ.د. مجدى إلياس فارس**

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 217	اسم المقرر : Introduction to Logic	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:**
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:**
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:**
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:**.
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:**
٤ـ محتوى المقرر :	- The Propositional Logic 1 - Propositional Calculus and proofs - Predicate Logic and Quantifiers - Divisibility Theory of Integers - The Theory of Congruence - Primes and Their Distributions - Finite Continued Fractions.
٥ـ أســاليــب التعليـــم و التعلـم :	1- lectures 2- tutorials **3-** use information technology
٦ـ أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحدودة :	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧ـ تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess 2- Final exam to assess 3- Mid-Term Exam to assess
ب- التوقيت	1- Oral exam week 16 2- Final exam week 16 3-Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 %

	- Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	
ب- الكتب ملزمة	
ج- كتب مقترحة	
د- دوريـــات علميـــةأو نشرات	http://en.wikipedia.org

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
- The Propositional Logic 1					
- Propositional Calculus and proofs					
- Predicate Logic and Quantifiers					
- Divisibility Theory of Integers					
- The Theory of Congruencies					
- Primes and Their Distributions					
- Finite Continued Fractions.					

أستاذ المادة : د. مرفت عبد البارى الشرباصى

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١- بيانات المقرر		
كود المادة : Math 228	**اسم المقرر : Difference Equations (1)**	**المستوى: الثانى**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية : ٣ساعة معتمدة نظري: ٢ تمارين : ٢ عملي : ٠**	

٢- هدف المقرر :	**For students undertaking this course, the aims are to:** - Teach the student difference equations and how to use them to study some real world phenomena
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Teach the student basics of difference equations. a2- Teach the students basics of dynamical systems, equilibrium, stability and bifurcation
ب- المهارات الذهنية :	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1-Teach the student how to build models. b2-Teach the student how to distinguish between existing model
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Teach the student how to build models representing real life phenomena
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Teach the students how to work in groups. d2- Teach the students to use the internet. d3- Teach the students how to present their work in oral form.
٤- محتوى المقرر :	i) One dimensional difference equations. ii) Equilibrium, stability, elements of bifurcation and chaos. iii) Systems of difference equations. iv) Higher dimension bifurcation e.g. Hopf bifurcation and chaos. v) Applications.
٥- أساليب التعليم و التعلم :	1- lectures 2- tutorials **3-** use information technology
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة :	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess a1- a2,b1- b2,d1- d3 2- Final exam to assess a1- a2,b1- b2,c1 3- Mid-Term Exam to assess a1- a2,b1- b2,c1
	1- Oral exam week 16 2- Final exam week 16

3-Mid-Term Exam week 7	
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% - Semester work 0% - Other types of assessment 0% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
	أ- المذكرات
	ب- الكتب ملزمة
S. Elaydi (2005), Introduction to difference equations, Springer.	ج- كتب مقترحة
http://en.wikipedia.org	د- دوريـــــات علميـــــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- difference Eq.	**1**	**a1**			
equilibrium	**2**	**a2**			
Stability	**3**	**a2**			
Applications	**4**		**b1,b2**	**c1**	**d1,d2,d3**
Bifurcation	**5**	**a2**			
Chaos	**6-7**	**a2**			
2- System of difference Eq.	**8**	**a1**			
equilibrium	**9**	**a2**			
Stability	**10**	**a2**			
Applications	**11**		**b1,b2**	**c1**	**d1,d2,d3**
Bifurcation	**12**	**a2**			
Chaos	**13-14**	**a2**			

أستاذ المادة : أ.د. السيد محمد السيد أحمد

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 211	اسم المقرر : Real analysis	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- Provide students with the fundamental of mathematical analysis and stimulate the development of mathematical thinking. 2- Provide students with the basic theorems and definitions of convergent sequences and series. 3- Apply different tests of convergence of sequences and series.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a. Knowledge and Understanding** **On completing this course, students will be able to:** a1- understand the concept of function, and its role in mathematical analysis a2 – be aware of the relevant theories of mathematical analysis andtheir applications a3 – be aware of the basic concepts of convergent tests and their application. a4 – recognize different types of series such as power series and alternating series. a5 – understand the uniform convergence tests to a class of series.
ب- المهارات الذهنية :	**b. Intellectual Skills** **On completing this course, students will be able to:** b1 -apply mathematical logic in testing convergent series and sequences. b2- Distinguish between convergent and divergent sequences b3 – Analyze power series and Fourier series. b4 - develop analytic intuition and proof skills b5 - Compare between different type of convergent tests
ج- المهارات المهنية الخاصة بالمقرر :	**c. Professional and Practical Skills** **On completing this course, students will be able to:** c1- Apply reasoning techniques of mathematical analysis in more advanced branches of mathematics such as functional analysis nonlinear analysis and topology c2- test the convergence of different type of series. c3- Prove theorems of convergence and divergence of series. c4- Apply Fourier series to a given function. c5- Use computer software to study the asymptotic behaiour of sequence.
د- المهارات العامة:	**d. General and Transferable Skills** **On completing this course, students will be able to:** d1. Think independently, set tasks and solve problems on a scientific basis. d2. use , efficiently, information and communication technology d3. Work effectively in groups.
٤ـ محتوى المقرر:	– Bounded sets, upper and lower limits of functions, sequences of real numbers, Limits of sequences – Convergence and diverhence of sequenc .Bounded and monotone sequences ,Cauchy sequences – Real series, convergent serie,the geometric series and the the harmonic series – Series with positive and negative terms. Alternating series test. – Series with non- negativeterms, the comparison,nth root and the Ratio tests

– Absolute and conditional convergence , power series and radius of convergence – Convergence tests : Integral. Rabbe, logarithinic, – De Morgan and Gauss – Series of fulctions and uniform convergence, Virstrass, Dirchlet tests – Infinite product of series – Fourier series, sin , cos series	
1- lectures 2- tutorials **3-** use information technology	٥- أساليب التعليم و التعلم :
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة :
٧- تقويم الطلاب :	
1- Oral exam to assess a1-a5,b1-b5,d1-d3 2- Final exam to assess a1-a5, b1-b5, c1-c5 3- Mid-Term Exam to assess a1-a3,b1-b3,c1-c3	أ- الأساليب المستخدمة
1- Oral exam week 16 2- Final exam week 16 3-Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
- Avaliable in the Dept	أ- المذكرات
- Haggerty, Rod 'Fundamentals of Mathematical Analysis' Second Edition, Addison-Wesley 1993.	ب- الكتب ملزمة
Martin Campbell-Kelly and William Aspray, Computer .A History of the information machine New York 1996 Trench, William F. Introduction to Real Analysis, Prentice Hall, 2003. Bartle, Robert G. and Sherbert, Donald R. Introduction to Real Analysis (3ed.), New York: John Wiley and Sons, 2000.	ج- كتب مقترحة
http://www.mathcs.org/analysis/reals/ http://en.wikipedia.org/wiki/Real_analysis	د- دوريات علمية أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Bounded sets, upper and lower limits of functions, sequences of real numbers, Limits of sequences	1-2	a1, a2	b1, b2	c1, c2	d1, d2
Convergence and diverhence of sequence .Bounded and monotone sequences ,Cauchy sequences	3	a3, a4	b1, b2, b3	c1, c2, c3	d1-d3
Real series, convergent serie,the geometric series and the the harmonic series	4-5	a2, a3, a4	b1, b2, b3, b4	c1, c2, c3	d1-d3
Series with positive and negative terms. Alternating series test.	6	a2, a3	b2, b3, b5	c1, c2, c3	d1-d3
Series with non- negativeterms, the comparison,nth root and the Ratio tests	7	a5	b1, b2, b3	c1-c5	d1, d2,
Absolute and conditional convergence , power series and radius of convergence	8	a5	b1, b4, b5	c3, c5	d1, d2,
Convergence tests : Integral. Rabbe, logarithinic,	9	a3, a4, a5	b4, b5	c2, c3, c5	d1, d2, d3
De Morgan and Gauss	10	a5	b3, b4	c2, c3, c5	d1, d2, d3
Series of fulctions and uniform convergence, Virstrass, Dirchlet tests	11	a5	b4, b5	c3, c5	d2, d3
Infinite product of series	12	a5	b4, b5	c3, c5	d2, d3
Fourier series, sin , cos series.	13-14	a4, a5		c3, c4, c5	d2, d3

أستاذ المادة : د. عاطف ابراهيم المهدى

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 215	اسم المقرر : Linear Algebra 1	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- Provide students with basic concepts of linear algebra; namely, Algebra of matrices, vector spaces, linear transformations and operators and their properties.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing the course students will be able to:** a1- understand basic definitions and theories of the course a2- Learn the fundamental operations on matrices and calculate the determinant and the inverse of a matrix a3–be aware of the systems of homogeneous and nonhomogeneous linear equations. a4 - use standard methods to find bases of the vector spaces;
ب- المهارات الذهنية:	**b- Intellectual Skills:** **On completing the course students will be able to:** b1 - find real eigenvalues and eigenvectors of linear operators in 3-dimensional space; b2- convert symmetric matrices corresponding to linear operators in 3-dimensional space with real eigenvalues to a diagonal form b3- compute matrices for linear operators with regard to given bases b4- develop logical thinking
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1- Handing-in of homework and attendance at tutorials described in the second Year Handbook. c2 - Solve some simple problems in n- dimensional space c3 - Learn how can one transfer the applied mathematics problems to matrices form and solve it.
د- المهارات العامة :	**d-General and Transferable Skills :** **On completing the course students will be able to:** d1- Use Internet and Library to get information d2- Work in a group d3- solve simple algebraic
٤ـ محتوى المقرر :	• What is a field and examples of the well-known field • Matrices defined over a field, operations on matrices, Echelon form • Algebra of square matrices, inverted matrix, and system of linear equations. • What is a vector space, subspaces, intersection and addition of subspaces. • Linear combination, dependently and independently set of vectors, Basis and Dimension of a vector space. • Linear transformations and its properties and linear operators and its properties. • Transformations from a basis to another. • Eigen values and eigen vectors.

• Similar matrices and diagonalization for square matrices. • Applications	
1- lectures 2- tutorials **3-** use information technology	٥- أســـاليـــب التعليـــم و التعلـم:
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطـلاب ذوى القـدرات المحدودة
٧- تقويـــــم الطـــلاب :	
1- Oral exam to assess a1-a4,b1-b4,d1-d3 2- Final exam to assess a1-a4,b1-b4,c1-c3 3- Mid-Term Exam to assess a1-a4,b1-b4,c1-c3	أ- الأساليب المستخدمة
1- Oral week 16 2- Final exam week 16 3- Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
- Department notes in this course	أ- المذكرات
- H. Anton, Elementary Linear Algebra, Wiley 1994	ب- الكتب ملزمة
1- J.B. Fraleigh & R.A. Beauregard, Linear Algebra, Addison-Wesley 1995 2- R.B.J.T. Allenby, Linear Algebra, Butterworth Heinemann, 1997	ج- كتب مقترحة
http://joshua.smcvt.edu/linearalgebra/ http://www.math.unl.edu/~tshores1/linalgtext.html	د- دوريـات علميـة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
What is a field and examples of the well-known field	1	a1, a4		c1	d1, d2
Matrices defined over a field, operations on matrices, Echelon form	2	a1, a2		c1	d1- d3
Algebra of square matrices, inverted matrix, and system of linear equations.	3	a1,a2, a3	b2	c1-c3	d1- d3
What is a vector space, subspaces, intersection and addition of subspaces.	4	a3, a4	b2, b3	c1	d1, d2,
Linear combination, dependently and independently set of vectors, Basis and Dimension of a vector space.	5	a1-a4	b2, b3	c1, c2	d1, d2,
Linear transformations and its properties and linear operators and its proprties.	6	a1, a2	b2, b3	c1, c2	d1, d2
Transformation from basis to another basis	7-8	a1-a4	b1-b4	c1-c3	d2, d3
Eigenvalues and eigenvectors.	10-11	a3, a4	b3	c2, c3	d2, d3
Similar matrices and diagonalization for square matrices.	12-13	a3, a4	b1, b2,	c1-c3	d1- d3
Applications	14	a3, a4	b1, b3	c1-c3	d1, d3

أستاذ المادة : د. صالح المهدى

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 218	اسم المقرر : Solid Analytic Geometry	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- discuss and study the basic geometric properties and equations of straight lines , planes and spheres in three dimension and central quadrics in this way.
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing the course students will be able to:** a1 - provide a breadth of geometrical experiences in 3 dimensions a2- develop knowledge and understanding of basic concepts of the geometry of some curves and surfaces 3 dimensions a3- develop the students knowledge and the basic geometric properties about surfaces in three dimension
ب- المهارات الذهنية :	**b- Intellectual Skills:** **On completing the course students will be able to:** b1- be familiar with some curves and surfaces in space and be able to work with them b2- Apply transformations to find and simplify the equations of quadratic surfaces . b3- develop logical thinking coordinates.
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1- Use Geometry to illustrate the algebraic concepts c2 - Apply geometrical basis through modeling and solving real problems c3 - Handing-in of homework and attendance at tutorials described in Handing-in of homework and attendance at tutorials described in 3- the second Year Handbook c4- Use computer (maple software) to draw some geometrical curves and surfaces and study their properties
د- المهارات العامة :	**d-General and Transferable Skills :** **On completing the course students will be able to:** d1- Use Internet and Library to get information d2- be able to solve simple problems in 2, 3 - dimensional spaces d3- Work effectively both in a team, and independently on solve problems
	1- Rectangular , spherical and cylindrical coordinates 2- straight line in space 3- the plane 4- surfaces in space (sphere-cone- cylinder) - some other quadric surfaces 5- The general equation of the second degree in three variables

٥- أســاليــب التعليــم و التعلــم :	1- 4 hour lecturer weekly with exercise sheets and solution sheets 2- Weekly 4 hour tutorials in groups 3- Using Internet facilities
٦- أساليب التعليم و التعلم للطـلاب ذوى القـدرات المحـدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess a1,a2,b2,c2,d2,d3 2- Final exam to assess a1,a2,b1,b2,c1,c2,d1,d2,d3 3- Mid-Term Exam to assess a1,a2,b1,b2,c2,d2
ب- التوقيت	1- Oral week 16 2- Final exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% - Semester work 0% - Other types of assessment 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	- Department notes in analytic geometry in three dimension
ب- الكتب ملزمة	Coordinate geometry" (2-D,3-D) G.C. Sharma, New Delhi,2003.
ج- كتب مقترحة	E. Swokowski, M. Olinick & D.Pence, (1994) "Calculus", 6th Edition, PWS Publishing Co
د- دوريـات علميـة أو نشرات	web.page:http://mathworld.wolfram.com

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Analytic geometry II					
Rectangular , spherical and cylindrical coordinates	1-2	d1,d3	c1,c2		a1
Straight line in space	3-4	d2	c2,c3	b1	a2,a3
The plane and their equations	5-7	d3		b1	a2
Surfaces in space (sphere-cone-cylinder)	8-10	d2	c3,c4		a3
Some other quadric surfaces	11	d2,d3	c4,c5	b2	
The general equation of the second degree in three variables	12-13	d1,d2	c3	b2	a1,a3

أستاذ المادة : د. عواطف شاهين

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 223	اسم المقرر : Mechanics 4	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Give a thorough understanding of the fundamentals of theoretical mechanics as well as other courses related to it (e.g., advanced mechanics, theory of elasticity, hydrodynamics, … etc).
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completion of this course successful students will be able to:** a1 - Know and understand Kepler's laws a2 - Understand the concept of stability in mechanics a3 - Be familiar with the notions of central orbits, Projectiles in the earth's gravitational field and the artificial earth satellites
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completion of this course successful students will be able to:** b1 - study the stability of a particle about its equilibrium positions in mechanical problems b2- Solve some problems on Kepler's laws. b3- Study the motion of a particle in plane as well as in space
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completion of this course successful students will be able to:** c1 - Solve problems of the motion of particles and rigid bodies c2 - Use various coordinates systems in problems in classical mechanics c3 - Use stability theorems to study the plantary motion
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1- develop skills in modelling phenomena related to classical mechanics. d2- Work in team d3- Do internet search.
٤ـ محتوى المقرر :	1. Plane motion of a particle 2. Constrained motion 3. Stability of equilibrium and stationary motion 4. Damped simple harmonic motion-Forced vibrations 5. Centeral orbits- Orbital motion of plantes and Satellites. 6. Motion of a particle in three dimensions-Motion on a smooth surface-Motion on a rotating earth 7. Plane motion of a rigid body
٥ـ أساليب التعليم و التعلم :	1- twohours lecturer weekly with exercise and solution sheets 2- two hours tutorial weekly with exercise sheets and solution sheets 3- Using Internet facilities

٦ـ أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــــدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧ـ تقويـــــم الطـــلاب :	
أـ الأساليب المستخدمة	1- Oral exam to assess a1-a3,b1-b2 d1-d3 2- Final exam to assess a1-a3,b1-b3, c1-c3 3- Mid-Term Examination to assess a1,a2,b1, c1-c2
بـ التوقيت	1- Oral week 15 2- Final exam week 15 3- Mid-Term Examination week 7
جـ توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%
٨ـ قائمة الكتب الدراسية و المراجع :	
أـ المذكرات	Yehia H. M. Particle and rigid body dynamics (in Arabic)
بـ الكتب ملزمة	Targ. S.,Theoretical Mechanics A Short Course, English Translation, Mir publisher , 1976 .
جـ كتب مقترحة	Loney S. L. Dynamics of particles , Cambridge, 1960. Basaly, W. A. Dynamics of particles and rigid bodies , 1969 (in Arabic)
دـ دوريـــات علميـــة أو نشرات ... الخ	http://en.wikipedia.org/wiki/Dynamics

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1. Plane motion of a particle	1-2	a1	b3	c1	d1
2. Constrained motion	3	a1, a2		c1, c2	d1
3. Stability of equilibrium and stationary motion	4	a1, a2	b1	c3	d1, d3
4. Damped simple harmonic motion-Forced vibrations	5	a1, a2	b1	c3	d1, d3
5. Centeral orbits- Orbital motion of plantes and Satellites.	6-8	a1, a2	b1, b2	c1-c3	d1-d3
6. Motion of a particle in three dimensions-Motion on a smooth surface-Motion on a rotating earth	9-11	a1, a2	b1, b2	c1-c3	d1-d3
7. Plane motion of a rigid body	12-14	a1-a3	b1-b3	c1-c3	d1-d3

أستاذ المادة : د. عادل عبد العزيز

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كليـة : العلـــــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 231	**اسم المقرر :** **Introduction to Statistics &Probabilities**	**المستوى: الثانى**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1- Provide students by basic concepts of statistics and probability. Namely: ▪ displaying the data,measures of central tendency, measures of dispersion, simple regression, probability, types of random variables and some discrete probability distributions .
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing the course students will be able to:** a1- recognize different types of data a2 – acquire the measures of central tendency, dispersion and correlation a3 - understand the basic concepts of probability, conditional probability and the related laws a4- explain different types of random variables a5- identify the probability function, moments, and moment generating function of a random variable a6- be aware of the properties of cumulative distribution function.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing the course students will be able to:** b1. differentiate between different types of data b2- distinguish between the central tendency and dispersion criteria b3- distinguish between the discrete and continuous random variables b4- apply probability laws to solve problems in probability
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1- design simple and grouped frequency tables c2 – evaluate measures of central tendency, dispersion and correlation for different types of data c3 - solve some problems related to distributions of discrete and continuous random variables
د- المهارات العامة :	**d-General and Transferable Skills** **On completing the course students will be able to:** d1. Think independently, set tasks and solve problems on a scientific basis. d2. use , efficiently, information and communication technology d3. Work effectively in groups.
٤ـ محتوى المقرر :	– Descriptive statistics – Measures of central tendency – Measures of dispersion – Elementary probability, combinatorial analysis, conditional probability,

independence and Bayes formula – Random variables (discrete and continuous), probability distribution, and moments of random variables – Cumulative distribution function and its properties – Discrete probability distributions	
1- Lectures 2- Tutorial classes	٥- أســـاليـــب التعليـم و التعلـم
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة
	٧- تقويـــــم الطـــلاب :
1- Oral exam to assess a1- a6, b1-b4,d1- d3 2- Final exam to assess a1- a6, b1-b4, c1-c3 3- Mid-Term Examination to assess a1- a4, b1-b3, c1-c3	أ- الأساليب المستخدمة
1- Oral week 15 2- Final exam week 15 3- Mid-Term Examination week 7	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%	ج- توزيع الدرجات
	٨- قائمة الكتب الدراسية و المراجع :
Department notes in	أ- المذكرات
Theory and problems in statistic (Schaum series)	ب- الكتب ملزمة
Introduction to mathematical statistics (Erwin Kreyszing)	ج- كتب مقترحة
http://en.wikipedia.org/wiki/Dynamics	د- دوريـــات علميـــة أو نشرات

أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Descriptive statistics	1	a1	b1	c1	d1
Measure of central tendency	2-3	a2	b2	c2	d1, d3
Measures of dispersion	4-5	a2	b2	c2	d1, d3
Elementary probability, combinatorial analysis, conditional probability, independence and Bayes formula	6-8	a3, a4	b3	c3	d1, d3
Random variables, probability distribution, and moments of random variables	9-10	a4-a5	b4	c3	d1, d3
Cumulative distribution function and its properties	11-12	a5	b4		d1, d3
Discrete probability distribution	13-14	a6	b4	c3	d1,d2

أستاذ المادة : أ.د. محمود طه ياسين
رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 224	اسم المقرر : Mathematical Biology	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** -Teach the student how to use mathematics to understand biological systems.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing the course students will be able to:** a1- Teach the student mathematics needed to understand bio-systems e.g. difference equations, differential equations.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing the course students will be able to:** b1- Teach the student how to build models motivated by biology. b2- Interpret mathematical results in terms of biology
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills** **On completing the course students will be able to:** c1- Teach the student the practical effects of mathematical models e.g. on vaccination.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Teach the student team work. d2 -Teach the student how to use internet**.**
٤ـ محتوى المقرر :	– dimensional Difference equations – Systems of difference equations – Equilibrium, stability, bifurcation and chaos – Differential equations – Applications e.g. epidemics, predator- prey
٥ـ أساليب التعليم و التعلم	1. Lectures 2. Internet 3. Projects
٦ـ أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧ـ تقويم الطلاب :	

أ- الأساليب المستخدمة	1- Oral exam	to assess	c1,d1,d2
	2- Final exam	to assess	a1,b1,b2
	3- Mid-Term Examination	to assess	a1,b1,b2
ب- التوقيت	1- Oral	week	15
	2- Final exam	week	15
	3- Mid-Term Examination	week	7
	4- Report	week	15

ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 % - Semester work 0% - Other types of assessment 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	- Department out in this course
ب- الكتب ملزمة	1**N.Britton "Essential mathematical biology" Springer 2003**
ج- كتب مقترحة	
د- دوريـــات علميـــة أو نشرات	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
dimensional Difference equations	١-٢	**a1**	**b1,b2**		
Systems of difference equations	٣-٤	a **1**	**b1,b2**		
Equilibrium, stability, bifurcation and chaos	**5-8**	a **1**	**b1,b2**		
Differential equations	**9-10**	a **1**	**b1,b2**		
Applications e.g. epidemics, predator- prey	**11-13**			**c1**	**d1,d2**

أستاذ المادة : أ.د. ا على شمندى عبد الواحد محمود

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة :Math 242	اسم المقرر : جبر الحاسب	المستوى: الثانى
التخصص: إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ٢	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1. apply well developed team skills to the application of solutions to engineering problems; 2. develop an appropriate mathematical model of statistical problem; 3. develop a logical and well structured computer program; 4. discuss and use the concepts of debugging a computer program; 5. use a range of numerical computing techniques to develop an appropriate model from available data; 6. demonstrate a knowledge of an make appropriate use of a range of methods in the design and analysis of engineering experiments; 7. analyse the behavior of mathematical system using a general purpose numerical software package.
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** On completing the course students will be able to: a1- recognize different types of data a2 – acquire the measures of central tendency, dispersion and correlation a3 - understand the basic concepts of probability, conditional probability and the related laws a4- explain different types of random variables a5- identify the probability function, moments, and moment generating function of a random variable a6- be aware of the properties of cumulative distribution function.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1. differentiate between different types of data b2- distinguish between the central tendency and dispersion criteria b3- distinguish between the discrete and continuous random variables b4- apply probability laws to solve problems in probability
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1- design simple and grouped frequency tables c2 – evaluate measures of central tendency, dispersion and correlation for different types of data c3 - solve some problems related to distributions of discrete and continuous random variables
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1. Think independently, set tasks and solve problems on a scientific basis. d2. use , efficiently, information and communication technology d3. Work effectively in groups.

٤- محتوى المقرر :	1-Engineering problem solving methodologies and mathematical modeling 2- Problem solving case studies in engineering, drawn from areas such as mechanics, thermodynamics, structures, geomechanics, hydraulics and electromagnetic, that involve solving equations by iteration; solving sets of linear algebraic equations; regression and interpolation; and numerical calculus and differential equations. MATLAB will be the main tool employed in the solution of the case studies and emphasis will be given to problems that enhance the programming skills of students and that require the application of array and matrix operations; files, functions and data structures; and plotting
٥- أساليب التعليم و التعلم	1- Lectures 2- Tutorial classes
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess b1, b2, b3, b4, d1, d2, d3 2- Final exam to assess a1,a2,a3, a4, a5,a6, c1, c2, c3 3- Mid-Term Examination to assess 4- Practical Examination to assess
ب- التوقيت	1- Oral week 15 2- Final exam week 15 3- Mid-Term Examination week 7 4- Practical Examination week
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20 0% - Semester work 0% - Other types of assessment 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	- Department out in this course
ب- الكتب ملزمة	- Introduction to mathematical statistics (Erwin Kreyszing)
ج- كتب مقترحة	Palm, W J 2001, *Introduction to Matlab 6 for Engineers*, McGraw-Hill.
د- دوريات علمية أو نشرات	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1-Engineering problem solving methodologies and mathematical modeling					
2- Problem solving case studies in engineering, drawn from areas such as mechanics, thermodynamics, structures, geomechanics, hydraulics and electromagnetic, that involve solving equations by iteration; solving sets of linear algebraic equations; regression and interpolation; and numerical calculus and differential equations. MATLAB will be the main tool employed in the solution of the case studies and emphasis will be given to problems that enhance the programming skills of students and that require the application of array and matrix operations; files, functions and data structures; and plotting					

أستاذ المادة : د.

رئيس مجلس القسم العلمي :ا.د. مجدى إياس فارس

المستوى الثالث

جامعة : المنصورة
كـليـة : العلـــــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 311	**اسم المقرر : Measure Theory**	**المستوى: الثالث**
البرنامج : الاحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

For students undertaking this course, the aims are to: - Learn how to use high math. courses to solve real life problems. - Rrelate math. concepts to basic statistical and probabilistic concepts	**٢ـ هدف المقرر :**
٣ـ المستهدف من تدريس المقرر	
a- Knowledge and Understanding **On completing this course, students will be able to:** a1 – Understand advanced some mathematical concepts. a2 – Relate these concepts to basic probability concepts	**أـ المعلومات و المفاهيم :**
b- Intellectual Skills **On completing this course, students will be able to:** b1- Relate these concepts to basic statistics concepts b2- Relate these concepts to basic probability concepts	**بـ المهارات الذهنية :**
c- Professional and Practical Skills **On completing this course, students will be able to:** c1 – Understand why some phenomena are not predictable on the long range (chaos).	**جـ المهارات المهنية الخاصة بالمقرر :**
d- General and Transferable Skills **On completing this course, students will be able to:** d1- Use internet for further independent study d2- to work in groups	**دـ المهارات العامة :**
– def. measure function – measurable sets – measurable functions – Integration – measure dynamics	**٤ـ محتوى المقرر :**
1- Lectures, exercise sheets and solution sheets 2- Tutorials in groups 3- Internet facilities 4- revision questions	**٥ـ أســاليــب التعليـــم و التعلـم :**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦ـ أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــدودة :**
٧ـ تقويـــــم الطـــلاب :	
1- Final Exam to assess a1-a2,b1-b2 2- Oral Exam to assess c1,d1,d2 3- Mid-Term Exam to assess a1-a2,b1-b2	**أـ الأساليب المستخدمة**
1- Final Exam week 15 2- Oral Exam week 15 3- Mid-Term Exam week 7	**بـ التوقيت**

ج- توزيع الدرجات	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Avaliable in the Dept.
ب- الكتب ملزمة	
ج- كتب مقترحة	www.math.uconn.edu/~bass/meas.pdf
د- دوريات علمية أو نشرات	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
def. measure function	1	a1-a2			
measurable set	2-3	a1-a2			
measurable function	4-6	a1-a2	b1-b2		
integration	7-9	a1-a2	b1-b2	c1	d1-d2
measure dynamics	10-12	a1-a2	b1-b2	c1	d1-d2

أستاذ المادة : أ.د. السيد محمد السيد أحمد

رئيس مجلس القسم العلمي : أ.د.مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كليـة : العلـــــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 313	اسم المقرر : Numerical Analysis (1)	المستوى: الثالث
البرنامج : الاحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** – Provide the student with a firm introduction to the basic algorithms – Used in scientific computations, their design and analysis and implement similar algorithms for the solution of related scientific problems. – Present the basic mathematical foundations of numerical analysis and scientific computing; – Give the students hands-on experience in solving nonlinear equations. – Provide useful tools for scientists, engineers and others.
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 – be familiar with efficient and stable algorithms for finding roots of non-linear equations. a2 - Understand the use of interpolation for numerical differentiation and integration. a3 – know and understand stable solution algorithms for ordinary differential equations.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- find roots of complicated nonlinear problems using MATLAB; b2- Introduce the student to modern methods, techniques, and pitfalls in scientific computing b3- develop appropriate techniques (including graphics) for particular applications and solutions
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1 - write programs with different languages such as C++, FORTRAN …and execute them to perform numerical problems; c2 - maintain existing numerical software c3 - demonstrate an understanding of a variety of computer-based methods and their errors, used in the solution of numerical problems
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1- work in team d2- Use Internet to search in Numerical Analysis Resources d3- manage the time
٤ـ محتوى المقرر :	– Introduction to computer science and number system and type of errors – Roots of Non-Linear Equations – Lagrange interpolation – Divided difference formula

– Numerical integration – Numerical solution to ODE – Gaussian Elimination – Pivoting LU Factorization	
1- Lectures, exercise sheets and solution sheets 2- Tutorials 3- Internet facilities	٥- أســـاليـــب التعليـــم و التعلـم :
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة :
٧- تقويـــــم الطـــلاب :	
1- Final exam to assess a1-a3, b1-b3,c1-c3 2- Oral exam to assess a1-a3, b1-b3,d1-d3 3- Mid-Term Exam to assess a1-a3, b1-b3,c1-c3	أ- الأساليب المستخدمة
1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
- Lecture Notes	أ- المذكرات
Burden R.L. and J. D. Faires, Numerical Analysis, Sixth edition, Brooks/Cole, Pacific Grove, CA, 1997.	ب- الكتب ملزمة
Mathews, J. H., and K. D. Fink. Numerical Methods Using MATLAB®. 3rd ed. Prentice Hall, 1999.	ج- كتب مقترحة
http://en.wikipedia.org/wiki/Numerical_analysis	د- دوريـــات علميـــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Introduction to computer science and number system and type of errors	1-2	a1, a3	b1, b2	c1, c2	d1, d2
Roots of Non-Linear Equations	3-4	a2,a3	b1, b2	c1, c2	d2, d3
Lagrange interpolation	5-6	a2,a3	b2, b3	c2,c3	d2
Divided difference formula	7-8	a1,a3	b1, b3	c2,c3	d1, d2
Numerical integration	9-10	a2,a3	b2, b3	c1, c2	d2, d3
Numerical solution to ODE	11-12	a2,a3	b2, b3	c1, c2	d1, d3
Gaussian Elimination	13	a1,a2	b1, b3	c1, c2	d2, d3
Pivoting LU Factorization	14	a1,a2,a3	b1, b2, b3	c1, c2,c3	d1, d2,d3

أستاذ المادة : أ.د. المتولى محمد العباسى

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 331	**اسم المقرر :** Probability Theory	**المستوى: الثالث**
البرنامج : الاحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - provide students by the techniques which help them to find the distribution of functions of random variable, and dealing with the distribution of the vector of random variables.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 – Be aware by most of the continuous distributions a2 – Determining the moment generating function and the characteristic function of a random variable a3 – understand the techniques of finding the distributions of functions of random variables. a4- Understand how one can get the joint probability distribution, , conditional distributions and the conditional moments
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- Distinguish between the Moment generating function and characteristic function b2- Apply the techniques of finding the distributions of functions of random variables. b3- Be aware by the relation between the moment generating function and the distribution function b4- Be aware by the techniques of obtaining the joint distributions and the marginal distributions
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1 – Obtaining the moments and conditional moments for the univariate and bivariate random variables respectively. c2 - Use the moment generating function/ characteristic function to identify the distribution function c3 - Solve problems related to the functions of random variables and the random vectors
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1- Encourage the students to express themselves in the class and to present their views d2- Work in a group

٤- محتوى المقرر :	– Continuous random variables – Moment generating function and characteristic function – Continuous distributions – Functions of random variables – Random vectors, marginal and conditional distributions – Independence, conditional moments
٥- أساليب التعليم و التعلم :	1- 3 hour lecturer weekly with exercise sheets and solution sheets 2- Weekly 1 hour tutorials in groups 3- Using Internet facilities
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Final exam to assess a1-a4 ,c1-c3, b1-b4 2- Oral exam to assess a1-a4, b1-b4, d1-d2 3- Mid-Term Exam to assess a1-a3,b1-b2, c1-c3
ب- التوقيت	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	- Lecture Notes
ب- الكتب ملزمة	Rebert, V.H and Allan, T. Introduction to mathematical statistics.
ج- كتب مقترحة	Douglas, C. and George, C. (2003). Applied statistics and probability for engineering. John Wiley & Sons. Inc
د- دوريات علمية أو نشرات ... الخ	http://en.wikipedia.org/wiki/Probability_theory

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Continuous random variables	1	a1	b1	c1	
Moment generating function and characteristic function	2	a2	b1	c2	
Continuous distributions	3-5	a1	b2	c3	
Functions of random variables	6-9	a3	b2		
Random vectors, marginal and conditional distributions	10-12	a4	b3	c3	
Independence, conditional moments	13	a4	b4	c3	d1-d2

أستاذ المادة : ا.د. محمود طه ياسين

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كليـة : العلـــــوم
قســم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 333	اسم المقرر : Statistics Theory (1)	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1 - Outline the basic information of different types of samples and the sampling distributions 2 - Study the properties of estimators 3 - Study the methods of point estimation 4 - Enable the student to use the confidence interval estimation for the population parameters
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-Acquire an Understanding of the different types of samples. a2 - Identify the sampling distributions of the sample statistics. a3 - understand the ideas of bias, consistency, sufficiency and minimum variance unbiased estimators a4 - Explain the maximum likelihood estimator , the method of moments estimator , the least squares estimator , the Bayesian estimator and the decision function approach a5 - Recognize the confidence interval for parameters a 6- List the sample size estimation
بـ المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1 - develop and apply the methods of selecting the random samples. b2 - distinguish between the sampling distribution and the usual distribution b3 -Apply the methods of finding the point estimators for the unknown population parameters b4 - Construct the interval estimation for the unknown parameters
جـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1 - Critically use the table of random numbers in selecting simple random samples. c2 - differentiate between one and two sample distribution c3 - Apply the properties of the estimators in determining the best one. c4 - Compare between different methods of point estimation c5 - Constructing the confidence intervals
دـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1 - Collect and analyze the data d2 - Solve the problems on a scientific basis d3 - Search for information d4 - Present results in oral and written means

٤- محتوى المقرر :	1. Types of samples: simple random sample, stratified, systematic and cluster samples 2. The sampling distribution of the mean, variance and the proportion 3. The sampling distribution of the difference between means , between the proportions and the ratio of variances 4. Properties of a good estimator: unbiasedness, efficiency, consistency and sufficiency 5. The Information function. 6. Methods of point estimation: method of moments, method of maximum likelihood, method of least squares, Bayesian method and the decision function approach 7. The confidence interval of the unknown parameter of one population. 8. The confidence interval of the difference between two unknown means, difference between two proportion and the ratio of the variances of two populations. 9. Estimation of the sample size
٥- أساليب التعليم و التعلم :	1- Lectures 2- Tutorials
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة :	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Final exam to assess a1- a6, b1 - b5 , c1 - c5 , d2 2- Oral exam to assess a1 - a6 , b1, b2,d1-d4 3- Mid-Term Exam to assess a1 , a2, b1 , b2 , c1 , c2 , d2
ب- التوقيت	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 6
ج- توزيع الدرجات	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	- Lecture Notes
ب- الكتب ملزمة	Robert V. Hogg & Allan T. Crig, Introduction to Mathematical Statistics. Douglas, C. and George, C. (2003). Applied statistics and probability for engineering. John Wiley & Sons. Inc
ج- كتب مقترحة	Hogg, R.V. and Tanis, E.A. (2006). Probability and Statistical Inference, 7th edition. Prentice Hall.
د- دوريات علمية أو نشرات ... الخ	**http://en.wikipedia.org/wiki/Probability_theory**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Types of samples: simple random sample, stratified, systematic and cluster samples	1	a1	b1	c1	d1 - d4
The sampling distribution of the mean, variance and the proportion	2-3	a2	b2	c2	d1 - d4
The sampling distribution of the difference between means , between the proportions and the ratio of variances	4	a2	b2	c3	d2 - d4
Properties of a good estimator: unbiasedness, efficiency, consistency and sufficiency	5-6	a3	b3	c3	d2 - d4
The Information function.	7	a3	b3	c3	d2 - d4
Methods of point estimation: method of moments, method of maximum likelihood, method of least squares, Bayesian method and the decision function approach	8-9	a4	b3	c4	d2 - d4
The confidence interval of the unknown parameter of one population.	10-11	a5	b4	c5	d2 - d4
The confidence interval of the difference between two unknown means, difference between two proportion and the ratio of the variances of two populations.	12-13	a5	b4	c5	d2 - d4
Estimation of the sample size	14	a6	b4	c5	d2 - d4

أستاذ المادة : د. فاتن عبد الله حافظ شيحه

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة : المنصورة
كـــلية : العلوم
قسم / الرياضيات

توصيف مقرر دراسى

١ ـ بيانات المقرر		
كود المادة : Math 341	اسم المقرر : Structured Programming	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٠ عملى: ٢	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1. Have gained a deeper appreciation of the way in which computer science has been applied to the problem of artificial intelligence, and in particular for more recent techniques concerning knowledge representation, uncertainty learning. 2. Know how to model situations using a variety of knowledge representations. 3. Be able to design problem solving method based on knowledge representation and learning techniques. 4. Know how probability theory can be applied in practice.
٣ـالمستهدف من تدريس المقرر:	
أ ـ المعلومات والمفاهيم:	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1. Recognize the basic concepts and methods used in the field of Artificial intelligence. a2. Understand the theories, method and practices of Artificial Intelligence techniques. a3. Be familiar with an agent-based intelligent system. a4. Understand how to solve problems by searching. a5. Understand several problem solving using fuzzy logic and statistical learning theory.
ب ـ المهارات الذهنية:	**b- Intellectual Skills** **On completing this course, students will be able to:** b1. Develop computing algorithms and to analyze their properties. b2. Formulate some of real problems using knowledge representation. b3. Utilize fuzzy logic to deal with uncertainty. b4. Analyze, interpret and model real problems using statistical learning theory techniques.
جـ ـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1. Apply basic probability theory to machine learning problems. c2. Implement and apply search techniques. c3. Implement, apply and systematically evaluate machine learning techniques. c4. Develop algorithms to solve different problems.
د ـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1. Design agent-based intelligent system. d2. Apply acquired knowledge to solve real situations in Artificial Intelligence(AI). d3. Deal with current advances in Artificial Intelligence

٤ـ محتوى المقرر :	– Introduction to Artificial intelligence – Intelligent Agents part1 – Intelligent Agents part2 – Intelligent Agents part3 – Solving Problems by Searching part1 – Solving Problems by Searching part2 – Introduction to Statistical Learning theory part1 – Introduction to Statistical Learning theory part2 – Introduction to Statistical Learning theory part3 – introduction to Statistical Learning theory part4 – Fuzzy logic part1 – Fuzzy logic part2 – Fuzzy logic part3 – Fuzzy logic part4
٥ـ أساليب التعليم والتعلم :	**1- Lectures:** 2 Hours per week (2H/W) **2- Practical:** 2 Hours per week (2H/W)
٦ـ أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧ـ تقويم الطلاب:	
أـ الأساليب المستخدمة:	1- Final exam to assess a1- a5, b1 – b4 , c1 – c4 , 2- Oral exam to assess a1 – a5 , b1- b4,d1-d3 3- Mid-Term Exam to assess 4- Practical Exam to assess
ب ـ التوقيت:	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week
جـ ـ توزيع الدرجات	- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%
٨ـ قائمة الكتب الدراسية والمراجع :	
أـ مذكرات :	
ب ـ كتب ملزمة :	1. S. Russell and P. Norvig, "Artificial Intelligence: A Modern Approach" Third Edition, Prentice Hall.
جـ كتب مقترحة	1-
د ـ دوريات علمية أو نشرات ... الخ	2- http://www.freetechbooks.com 3- http://www.e-booksdirectory.com 4- http://www.dfebook.net 5- http://csitlibrary.blogspot.com 6- http://www.techbooksforfree.com/science.shtml 7- http://www.freebookcentre.net/SpecialCat/Free-Mathematics-Books Download.html 8- http://www.onlinecomputerbooks.com/free/books/mathematics/ 9- http://2020ok.com/13884.htm 10- http://tutorial.math.lamar.edu/sitemap.aspx

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Introduction to Artificial intelligence	1				
Intelligent Agents part1	2				
Intelligent Agents part2	3				
Intelligent Agents part3	4				
Solving Problems by Searching part1	5				
Solving Problems by Searching part2	6				
Introduction to Statistical Learning theory part1	7				
Introduction to Statistical Learning theory part2	8				
Introduction to Statistical Learning theory part3	9				
introduction to Statistical Learning theory part4	10				
Fuzzy logic part1	11				
Fuzzy logic part2	12				
Fuzzy logic part3	13				
Fuzzy logic part4	14				

أستاذ المادة : د./محمود محمد أحمد عبد اللطيف

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلوم
قسم / الرياضيات

توصيف مقرر دراسى

١ـ بيانات المقرر		
كود المادة : Math 342	اسم المقرر : Database Management Systems	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٠ عملى: ١	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** • Understand the basic concepts of DBMS: models, instances and schemes, data independence, DDL, DML, DB manager, DB administrator, DB users, database system architecture. • Understand the techniques of implementation of : Crash Recovery, Concurrency Control, Transaction Recovery, Security & Integrity. • Design a DB with different methods (EER model and the Relational model) • Querying a DB using SQL • Protect data in DB system.
٣ـ المستهدف من التدريس المقرر:	
أـ المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Understanding Advantages of a DBMS, Describing and Storing Data in a DBMS and different Data Structures. Concurrent Execution of Transactions. Understanding how to build a Conceptual Design With the ER Model a2- Understanding How to create and Modify Relations Using SQL, Querying Relational Data, a3- Understanding RELATIONAL ALGEBRA AND CALCULUS a4- Understanding referential integrity a5-To learn the basic techniques of computer simulation and programming. a6-To solve a wide range of equations and inequalities using methods from algebra, analysis and stochastic; especially using numerical algorithms.
ب- المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Ability to define the enterprise problems b2- Ability to drive different solution alternatives for the enterprise problems b3- Ability to use SQL for building QUERIES, CONSTRAINTS and TRIGGERS b4- Ability to use row and column functions
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Ability to use DBMS c2- Getting information from a table, ability to use and evaluate SQL queries, Using the Oracle Data dictionary c3- query a DB using SQL c4- familiarize with protecting data in DB system c5-Using computers and appropriate software to solve mathematical problems. c6-Using statistical techniques and related software packages.

d-General and Transferable Skills: **On completing this course, students will be able to:** d1- Ability to work in a team d2- Manage time effectively d3- .manage team capabilities in proper way d4- Use information and communication technology effectively. d5-Understand the relevance of Science to national development.	**د- المهارات العامة :**
–Basic principles of database management systems (DBMS) and of DBMS application development. –DBMS objectives, –systems architecture, database models with emphasis on Entity-Relationship and Relational models, –data definition and manipulation languages, –the Structured Query Language (SQL), –database design, application development tools, –access methods interfaces, –security, concurrency control and recovery, –query processors and optimizers	**٤- محتوى المقرر:**
4.1 Discussions 4.2 Quizzes 4.3 Reports and search on net 4.4 Lectures: 2 Hours per week (2H/W) 4.5 Practical: 2 Hours per week (2H/W)	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
	٧- تقويم الطلاب :
Final Exam to assess a1-a4, b1-b3 Midterm Exam to assess a1,a2,b1,b2 Practical Exam to assess a1,b1,c1 Oral Exam to assess d1,a2,b2,c2 Report to assess b2,b3,b4	**أ- الأساليب المستخدمة :**
Assessment 1 — Week # — 14 Assessment 2 — Week # — 8 Assessment 3 — Week # — 4 Assessment 4 — Week # — 6 Assessment 5 — Week # — 10	**ب- التوقيت :**
Weighting of Assessments Final-Term Examination 60% Midterm Examination 10% Practical Examination 20% Oral Examination 10% Total 100	**ج- توزيع الدرجات :**
	٨- قائمة الكتب الدراسية والمراجع :
	أ- مذكرات:
a) DATABASE MANAGEMENT SYSTEMS, Raghu Ramakrishnan, Johannes Gehrke, , McGraw-Hill Higher Education2003	**ب- كتب ملزمة**

(b) SQL FUNDAMENTALS, John J. Patrick, 2009 Pearson Education, Inc	
FUNDAMENTALS OF DATABASE SYSTEMS, Ramez Elmasri, Shamkant B. Navathe	**ج- كتب مقترحة :**
	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Basic principles of database management systems (DBMS) and of DBMS application development.					
DBMS objectives,					
systems architecture, database models with emphasis on Entity-Relationship and Relational models,					
data definition and manipulation languages,					
the Structured Query Language (SQL),					
database design, application development tools,					
access methods interfaces,					
security, concurrency control and recovery,					
query processors and optimizers					

أستاذ المادة : د./حازم مختار مختار البكرى

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلـــــوم
قسم / الرياضيات

توصيف مقرر دراسى

١- بيانات المقرر		
كود المادة : Math 347	اسم المقرر : Special issues in computer science (1)	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى: ٢ تمارين: ٠ عملى: ١	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** 1.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1-
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1-
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1-
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1-
٤- محتوى المقرر:	
٥- اساليب التعليم والتعلم:	1- Lectures. 2- Tutorial.
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	**The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.**

٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Final exam to assess 2- Oral exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess
ب- التوقيت :	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week
ج- توزيع الدرجات :	- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	
ج- كتب مقترحة :	
د- دوريات علمية أو نشرات..	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة

أستاذ المادة د/ محمد فتحي حامد الرحماوى

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 328	اسم المقرر : Difference Equations (2)	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** – Understand the concepts of difference equations. – Solve linear difference equations. – Study stability of linear and nonlinear equations. – Use computer package to study the qualitative behavior for the solutions of the difference equations.
٣ـ المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- develop knowledge and understanding on Qualitative data. a2- know and understand difference calculus. a3- solve linear difference equations as well as systems of difference equations. a4- convert a problem to a difference equation.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Represent the data. b2- Estimate some of the Statistical measurements. b3- Determine the appropriate method of solution. b4- Apply the Z-Transformation.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- make the model of the problem on the form of difference equation. c2- know the applications of discrete analysis.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- work on team. d2- use the internet. d3- introduce new idea to solve some problems.
٤ـ محتوى المقرر:	– Some definitions of difference equations, Existence and Uniqueness theorem, Difference operator, Shift operator and some properties of this operators, relation between them, Inverse of difference operator. – First order difference equations (algebraic solution and geometrical method of solution(Linear difference equations (Casoration – Fundamental theorems for homogenous equations(Linear difference equations with constant coefficients) – Dynamics of First-Order Difference Equations. – Linear Difference Equations of Higher Order. – Systems of Linear Difference Equations. – Stability Theory. – Higher-Order Scalar Difference Equations. – The Z-Transform Method and Volterra Difference Equations.

– Oscillation Theory. – Asymptotic Behavior of Difference Equations.	
1- lectures (2H/W) 2- Tutorial (2H/W) 3- Report	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
٧- تقويم الطلاب :	
1. Mid-term exam to assess a1-a4,c1,c2 2. Final exam to assess a1-a4,b1-b4,d1,d3 3. Oral exam to assess a3,a4,b3,b4,c2,d2 4. Report to assess a1-a4,d1-d3	**أ- الأساليب المستخدمة :**
1. Mid-term exam Week 7 2. Final exam Week 16 3. Oral exam Week 16 4. Report Week 16	**ب- التوقيت :**
Mid-term examination 10% Final-Term Examination 80% Oral Examination 10% Total 100%	**ج- توزيع الدرجات :**
٨- قائمة الكتب الدراسية والمراجع :	
	أ- مذكرات:
1- Elaydi, Saber, An Introduction to Difference Equations 3rd ed., 2005, ISBN: 0-387-23059-9. 2- S. Elaydi, An Introduction to Difference Equations, Second Edition ،Springe-Verlag, New York, 1999. 3- معادلات الفروق - والنماذج الإقتصادية الخطية الديناميكية - د/غزال عبدالعزيز عامر 4- Difference Equations: An Introduction with Applications, Harcourt/Academic Press, Second Edition, San Diego, 2001	**ب- كتب ملزمة**
	ج- كتب مقترحة :
http://en.wikipedia.org/wiki	**د- دوريات علمية أو نشرات..**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
– Some definitions of difference equations, Existence and Uniqueness theorem, Difference operator, Shift operator and some properties of this operators, relation between them, Inverse of difference operator.					
– First order difference equations (algebraic solution and geometrical method of solution(Linear difference equations (Casoration – Fundamental theorems for homogenous equations(Linear difference equations with constant coefficients)					
– Dynamics of First-Order Difference Equations.					
– Linear Difference Equations of Higher Order.					
– Systems of Linear Difference Equations.					
– Stability Theory.					
– Higher-Order Scalar Difference Equations.					
– The Z-Transform Method and Volterra Difference Equations.					
– Oscillation Theory.					
– Asymptotic Behavior of Difference Equations.					

أستاذ المادة : ا.د/

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

جامعة: المنصورة
كـلية: العلـــــوم
قـســم:الرياضيات

توصيف مقرر دراسى

١- بيانات المقرر		
كود المادة : Math 340	أسم المقرر: Mathematical Logic	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى: ٢ تمارين: ١ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** • Study of the processes used in mathematical deduction. • Distinguish semantic reasoning ("what is true?") from syntactic reasoning ("what can be shown?"). • Ask for a description of the structures which satisfy some set of axioms.
٣- المستهدف من التدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1-Admit techniques using truth tables, symbolic logic with only "and", "or", and "not" in the language, and various equivalences among methods of proof (e.g. proof by contradiction is a proof of the contrapositive). a2-Understand that syntactical rules and meaning (sementics) is associated with each formula. a3- Define the formal language contents.
ب- المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Organize the scientific knowledge. b2- Formalize the semantics of programming languages and specify and verify programs. b3- Describe the dynamic behavior of a circuit element or program.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Check the proof of different problems based on syntactical axioms. c2- Develop an automated theorem prove. c3- Construct a formal language interpretation for different mathematical systems.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Reason about knowledge by defining new truth measure such as consistency measure. d2- Solve the problems of similarity analysis and dissimilarity analysis. d3- Handle uncertainty logic (such as fuzzy logic). d4- Analyze the conflict problems.
٤- محتوى المقرر:	1- Introduction to logic programming. 2- Propositional Calculus: formula, model, tableaux. 3- Propositional Calculus: deductive systems. 4- Predicate calculus: formula, model, tableaux. 5- Predicate calculus: deductive systems. 6- Equivalence substitution. 7- Semantics and verification.

٥- اساليب التعليم والتعلم:	**-Teaching and Learning Methods** 1 - Lectures using data show. 2- Tutorial.
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	5. Mid-term exam to assess 6. Final exam to assess 7. Oral exam to assess 8. Report to assess
ب- التوقيت :	5. Mid-term exam Week 7 6. Final exam Week 16 7. Oral exam Week 16 8. Report Week 16
ج- توزيع الدرجات :	Mid-term examination 10% Final-Term Examination 80% Oral Examination 10% Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	• Stephen G. Simpson, Mathematical Logic, the Pennsylvania State University, 2008. • Amit Konar, Artificial intelligence and Soft Computing, CRC Press, Boca Raton London New York Washington, D.C., 2000. • Some Articles on Mathematical Logic.
ج- كتب مقترحة :	
د- دوريات علمية أو نشرات..	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Introduction to logic programming.	1-2	a1, a2			
2- Propositional Calculus: formula, model, tableaux.	3-4	a1, a2	b1	c1	d1, d2
3- Propositional Calculus: deductive systems.	5-6	a1, a2	b2	c2	d1, d2
4- Predicate calculus: formula, model, tableaux.	7-8	a2, a3	b2	c2	d1, d2
5- Predicate calculus: deductive systems.	9-10	a2, a3	b3		d3, d4
6- Equivalence substitution.	11-12	a2, a3	b3		d3, d4
7- Semantics and verification.	13	a2, a3		c3	d3, d4

أستاذ المادة : د. / أسامة محمود السيد السيد عودة

رئيس مجلس القسم العلمى: أ.د./ مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 324	**اسم المقرر : Function & Special Functions**	**المستوى: الثالث**
التخصص : الإحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Investigate the solution of partial differential equations which occur in mathematical physics by the method of separation of variables in a number of different geometries - be familiar with the special functions that arise from this method. - be familiar with the principle of orthogonality
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1- be aware of solving linear homogeneous partial differential equations of second-order by the method of separation of variables in Cartesian, cylindrical and spherical polar coordinates a2- will be familiar with Bessel functions and Legendre polynomials and their properties. a3- recognize the coefficients of the infinite series solution of the PDE and understand the orthogonality principle.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- relate high mathematical concepts to their relations. b2-evaluate the solution of differential equations by the hypergeometric functions as well as Bessel functions
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-analyze properties of special functions by their integral representations and symmetries c2-Model a problem and estimate its solution
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-Work in a team d2- use the internet d3- solve problems
٤ـ محتوى المقرر :	1- Gamma and Beta fns. 2- Hypergeometric functions. 3- Legendre polynomials. 4- Bessel functions. 5- Laguerre Polynomial. 6- Hermite polynomials.

٥- أساليب التعليم و التعلم :	1-Lectures 2- Tutorials 3-Workshops 4-Computer labs
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess a1-a3,b1-b2,d1-d3 2- Final exam to assess a1-a3,b1-b2,c1-c2 3- Mid-Term Exam to assess a1-a3,b1-b2,c1-c2
ب- التوقيت	1- Oral week 16 2- Final exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Available at the department
ب- الكتب ملزمة	N.M. Temme, "Special functions, an introduction to the classical functions of mathematical physics", Wiley, 1996.
ج- كتب مقترحة	
د- دوريات علمية أو نشرات	http://en.wikipedia.org/wiki

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Gamma and Beta fns	1-4	a1-a2	b1, b2	c1, c2	d1, d2, d3
2- Hypergeometric functions	5-6	a1,a2, a3	b1, b2	c1, c2	d1, d2, d3
3-Legendre polynomials	7-8	a2, a3	b1, b2	c1, c2	d1, d2, d3
4- Bessel functions	9-10	a2, a3	b1, b2	c1, c2	d1, d2, d3
5- Laguerre Polynomial	11-12	a2, a3	b1, b2	c1, c2	d1, d2, d3
6- Hermite polynomials	13	a3	b1, b2	c1, c2	d1, d2, d3

أستاذ المادة : د. مجدى برسوم

رئيس مجلس القسم العلمى : أ.د.مجدى إلياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كـليـة : العلـــــوم
قســم : الرياضيات

١ - بيانات المقرر		
كود المادة : Math 318	اسم المقرر : Integral Equations	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى: ٢ تمارين: ١ عملى: ٠	

٢ - هدف المقرر:	**For students undertaking this course, the aims are to:** - Recognize the different methods for solving Integral equations of Fredholm and Volterra types.
٣ - المستهدف من التدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-Demonstrate a detailed knowledge of the kinds of integral equations a2-Apply the mthods of solution a3-Formulate some boundary and initial value problems a4-Understand the method and physical sources of integral equations
ب-المهارات الذهنية	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Formulate a suitable mathematical method of solution. problems b2-Use integral equations in physical.problems b3-Understand modeling skills, logical thought and analysis.
ج- المهارات المهنية الخاصة بالمقرر:	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-solve various problems using the method illustrated c2-Solve some problems in mechanics(Abel's problems) c3-Use computer simulation
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-Work individual and with Team d2-Solve problems in of integral equations d3-Use library and internet
٤ - محتوى المقرر:	– Volterra Integral equations of the 2nd kinds. Resolvent kernel – Solve the integral equation of convolution type by using of Laplace transformation – Integro-differential equations – Volterra integral equations of the 1st kind – Euler Integrals – Abel's problem and its generalization – Fredholm integral equations of the 2nd kind – Methods of Fredholm determinants. – Fredholm Iterated kernel- resolvent kernel – Degenerate kernels – Approximate methods of solution – applications
٥ - أساليب التعليم والتعلم	1- Lectures 2 -Internet search

٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Final exam to assess a1- a4, b1- b3, c1-c3 2- Oral exam to assess a1- a4, b1-b3,d1-d3 3- Mid-Term Exam to assess a1- a4, b1- b3, c1- c3
ب- التوقيت :	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات :	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	6.1- 1-ABDUL J. JERRI , Introduction to integral equations with applications, 1999, JOHN WILEY & SONS INC
ج- كتب مقترحة	6.2- Problems and Exercises in integral equations Mir Publ., Moscow
د- دوريات علمية أو نشرات..	6.3- R Courant and D Hilbert, *Methods of Mathematical Physics, Vols. I and II,* Interscie

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Volterra Integral equations of the 2nd kinds. Resolvent kernel	1-2	a1, a2	b1		
solve the integral equation of convolution type by using of Laplace transformation	3	a1, a2	b1		
Integro-differential equations	4	a1, a2	b2		
Volterra integral equations of the 1st kind	5	a1, a2	b3	c1,c2,c3	d1,d2,d3
Euler Integrals	6	a1, a2		c1,c2,c3	
Abel's problem and its generalization	7	a1,a2,a3,a4	b2,b3	c1,c2,c3	d1,d2,d3
Fredholm integral equations of the 2nd kind	8	a1, a2		c1,c2,c3	d1,d2,d3
Methods of Fredholm determinants.	9	a1, a2, a3	b1		
Fredholm Iterated kernel- resolvent kernel	10	a1, a2, a3	b1		
Degenerate kernels	11	a1, a2, a3	b2		
Approximate methods of solution	12	a1, a2, a3	b3	c1,c2,c3	d1,d2,d3
applications	13-14	a1, a2, a3	b3	c1,c2,c3	

أستاذ المادة: أ.د. محمد نبيل علام

رئيس مجلس القسم العلمى : أ.د.مجدى الياس فارس

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 334	**اسم المقرر : Regression Analysis**	**المستوى: الثالث**
التخصص : إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٢ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:**
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم:	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-
٤ـ محتوى المقرر :	1- Simple linear regression, 2- Multiple linear regression 3- Analysis of residuals and predictions, 4- Detecting the outliers and multicolinearity, 5- Stepwise methods.

٥- أســـاليـــب التعليـــم و التعلـم :	1-Lectures 2- Tutorials 3-Workshops 4-Computer labs
٦- أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــدودة:	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral exam to assess 2- Final exam to assess 3- Mid-Term Exam to assess
ب- التوقيت	1- Oral week 16 2- Final exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	
ب- الكتب ملزمة	
ج- كتب مقترحة	
د- دوريـــات علميـــة أو نشرات	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Simple linear regression,					
2- Multiple linear regression					
3- Analysis of residuals and predictions,					
4- Detecting the outliers and multicolinearity,					
5- Stepwise methods.					

أستاذ المادة : أ.د./بيه السيد الدسوقى بلال

رئيس مجلس القسم العلمى : أ.د.مجدى إلياس فارس

جامعة : المنصورة
كـــلية : العلـــــوم
قسم / الرياضيـــات

توصيف مقرر دراسى

١- بيانات المقرر		
كود المادة : Math 343	اسم المقرر : Computer algebra	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٢ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:**
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:**
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:**
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:**
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:**
١- محتوى المقرر:	−General Introduction. −Brief history of mathematical computing. −Mathematical software packages, programming languages. Programming in MATLAB. −Essentials of MATLAB; vectors and matrices, colon notation, numeric output, graphics, control structures and logical tests. −MATLAB functions. Symbolic and high precision computations. −Essentials of programming Matlab using m-file scripts and functions. −Graphic visualizations.
٢- اساليب التعليم والتعلم:	1- Lectures 2- Tutorial

٣- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٤- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Final exam to assess 2- Oral exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess
ب- التوقيت :	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week
ج- توزيع الدرجات :	- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	1] Desmond J. Higham and Nicholas J. Higham, MATLAB Guide, Society for Industrial and Applied Mathematics, Philadelphia, PA, USA, 2000. [2] Nicholas J. Higham. Handbook of Writing for the Mathematical Science. Society of Industrial and Applied Mathematics, Philadelphia, PA, USA, second edition, 1998.
ج- كتب مقترحة :	
د- دوريات علمية أو نشرات..	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
General Introduction.					
Brief history of mathematical computing.					
Mathematical software packages, programming languages. Programming in MATLAB.					
Essentials of MATLAB; vectors and matrices, colon notation, numeric output, graphics, control structures and logical tests.					
MATLAB functions. Symbolic and high precision computations.					
Essentials of programming Matlab using m-file scripts and functions.					
Graphic visualizations.					

أستاذ المادة : د/ سامح السعيد عبد العزيز عسكر

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلوم
قسم / الرياضيات

توصيف مقرر دراسى

١ـ بيانات المقرر		
كود المادة : Math 344	اسم المقرر : Artificial Intelligence and Expert Systems	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٠ عملى: ٢	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** The course objectives include: • Develop informed opinions about the present and past opinion leaders in the artificial intelligence detbate. • Develop a simple, informal expert system by performing an effort of knowledge engineering of a real, human expert. • Develop a series of Web pages that will serve as current "state of the art" review of the various AI application areas which may be suggested by the instructor or brought to the course by participants. • Experience some actual hands –on demonstration software while accomplishing the review of current applications area AI.
٣ـ المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Know the relevant theories and their applications**.** a2- Describe the principle of the design of the application that are used for Artificial Intelligence. a3- Recognize the elements used in the artificial intelligence. a4- Be aware of the wide range of state-of-the-art techniques involved in artificial intelligence and modern computer based technology. a5- Identify the different type of Artificial Intelligence.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts. b2- Select the suitable lines of arguments and appropriate judgments in accordance based on scientific theories and concepts. b3- Be aware in the model of computer systems at different and appropriate levels of abstraction.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Identify and criticize the different methods used in addressing subject related issues. c2- Design and perform experiments in artificial intelligence. c3- Analyze the problems concerning system and protective grounding. c4- Conduct independent explorations in basic science and other technical information independently.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Use information and communication technology effectively. d2- Refer to IEEE and IEC standards concerning relay characteristics.

d3- Work in a team under pressure, deployment a set of communication skills and to write technical reports and presentations.	
– Studying the foundations of Artificial Intelligence in today's environment and instilling an understanding of representations and external constraints with the idea of enabling a student to think creatively. – There are many cognitive tasks that people can do easily and almost unconsciously but that have proven extremely difficult to program on a computer. – Artificial intelligence is the problem of developing computer systems that can carry out these tasks. – The course can focus on some central areas in AI such as: representation and reasoning, learning, AI languages such as Prolog and Lisp, expert systems, machine learning, robots, and natural language processing.	**٤- محتوى المقرر:**
1- Lectures 2- Tutorial	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
	٧- تقويم الطلاب :
1- Final exam to assess 2- Oral exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	**أ- الأساليب المستخدمة :**
1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week	**ب- التوقيت :**
- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%	**ج- توزيع الدرجات :**
	٨- قائمة الكتب الدراسية والمراجع :
Lecture Notes .	**أ- مذكرات:**
	ب- كتب ملزمة
• Dutta, Soumitra . Knowledge Processing and Applied Artificial Intelligence .Oxford , England :Butterworth, 1993. • Kelly , Richard V., Jr. Practical Knowledge Engineering. Bedford, MA: Digital Press, 1991.	**ج- كتب مقترحة :**
	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Studying the foundations of Artificial Intelligence in today's environment and instilling an understanding of representations and external constraints with the idea of enabling a student to think creatively.					
There are many cognitive tasks that people can do easily and almost unconsciously but that have proven extremely difficult to program on a computer.					
Artificial intelligence is the problem of developing computer systems that can carry out these tasks.					
The course can focus on some central areas in AI such as: representation and reasoning, learning, AI languages such as Prolog and Lisp, expert systems, machine learning, robots, and natural language processing.					

أستاذ المادة : ا.د/ د./حازم مختار مختار البكرى

رئيس مجلس القسم العلمي : ا.د./ مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلـــــوم
قسم / الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 345	أسم المقرر : Operating Systems	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى: ٢ تمارين: ٠ عملى: ٢	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** • Know fundamental concepts of operating systems. • Understand process management. • Understand memory management. • Understand file system management. • Understand I/O management. • Understand basics op protection and security. • Has some programming experience with the UNIX operating system. • Enhance self-learning capability of computer systems.
٣ـ المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Describe the principle of the computer system and its component. a2- Recognize the concepts used by computer and how they work. a3- Identify the different type of memories, processors and mother boards. a4- Identify the protocols of processors and mother board and how the work together.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts. b2- Evaluate the quality of a given system by testing its processor and memory.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Identify and criticize the different methods used in producing a system. c2- try to find a more convenient method for developing system. c3- design a digital circuits for motherboard.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Test the circuits for best results. d2- Employ various mathematical and computational skills when appropriate.
٤ـ محتوى المقرر:	– A tour of computer systems, representing and manipulating information, information storage, integer representations, integer arithmetic, floating point – Machine-level representation of programs, accessing information, control, procedures, array allocation and access – Optimizing program performance, the memory hierarchy, storage technologies, cache memories – Exceptional control flow , exception processes , virtual memory , – network programming

- Lectures - Tutorial	٥- اساليب التعليم والتعلم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:
	٧- تقويم الطلاب :
1- Final exam to assess 2- Oral exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	أ- الأساليب المستخدمة :
1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week	ب- التوقيت :
- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%	ج- توزيع الدرجات :
	٨- قائمة الكتب الدراسية والمراجع :
	أ- مذكرات:
- silberschatz, A.., Galvin, P. &Gange, G., Applied Operating System concepts, First edition, New York: John Wiley & Sonces, Inc., 2000. - gray J. Nutt, Operating Systems, Third edition, Pearson / Addison Wesley, 2003.	ب- كتب ملزمة
Computer Systems: An Integrated Approach to Architecture and Operating Systems by Umakishore Ramachandran and William D. Leahy Jr.	ج- كتب مقترحة :
	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
A tour of computer systems, representing and manipulating information, information storage, integer representations, integer arithmetic, floating point	1-4	**a1,a2,a3**			
Machine-level representation of programs, accessing information, control, procedures, array allocation and access	5-7	**a2,a3**	**b1**	**c2**	**d1**
Optimizing program performance, the memory hierarchy, storage technologies, cache memories	8-10	**a3**		**c1,c3**	
Exceptional control flow , exception processes , virtual memory	11-13	**a4**	**b2**	**c3**	**d4**
network programming	14		**b1**	**c1,c2**	**d1**

أستاذ المادة : د./محمود محمد أحمد عبد اللطيف
رئيس مجلس القسم العلمي : أ.د. مجدى الياس فارس

جامعة المنصورة
كـــلية العلـــــوم
قسم: الرياضيات

توصيف مقرر دراسى

١- بيانات المقرر		
كود المادة : Math 319	اسم المقرر : Number Theory	المستوى: الثالث
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢- هدف المقرر:	**students undertaking this course, the aims are to:** • Revise the basic concepts of number theory. • Learn some central themes of elementary number theory, and its relationship to algebraic number theory • Foster an appreciation of the extent, importance, utility and beauty of number theory, and of the historical contexts • Develop mathematical skills, particularly those associated with proof.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1- Have a complete understanding of the division algorithm. a2- Understand and be able to use Euclid's algorithm, continued fractions. a3- Understand Prime numbers and Fundamental Theorem of Arithmetic. a4- Explane Diophantine equations and Fermat's last theorem.
ب- المهارات الذهنية	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- Be familiar with common arithmetic functions and their expressions in terms of prime factors; b2- Be aware with the definition of a multiplicative function and how new multiplicative functions can be made up from others by summing over divisors. b3- Improve ability to solve mathematical problems.
ج- المهارات المهنية الخاصة بالمقرر:	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1- Be able to solve appropriate problems involving congruencies and modular arithmetic c2- Improve ability to read mathematics texts. c3- Develop skills in independent study and to foster a reflective and self-analytical approach to learning
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Encourage the students to express them selves in the class and to present their views d2- Work effectively in a group and independently. d3- Improve ability to communicate mathematics, both orally and in writing. d4- Improve student's ability to think logically, analytically, and abstractly.

٤- محتوى المقرر:	1- Fundamentals: The division algorithm, The Euclidean algorithm, Diophantine equations, The Chinese Remainder Theorem. 2- Prime numbers and their Distribution :The infinitude of primes, The fundamental theorem of arithmetic and unique factorization domains(viz "algebraic number theory"), Dirichlet's theorem. 3-Theory of Congruencies: Congruence, Linear congruencies, Modular arithmetic and multiplicative inverses, Fermat's Factorization, Fermat's little theorem.Wilson's theorem, 4- Euler's generalization of Fermat's Theorem, Euler's phi-unction. Euler's theorem 5- Primitive roots, order and indices Primitive Roots of Primes, Composite Numbers Having Primitive Roots, The Theory of Indices. 6- Number Theoretic Functions, Multiplicative Functions, The Mobius Inversion Formula 7- Introduction to algebraic number Theory, Ring of integers, ideals, Galois theory, Decomposition laws. 8- Continued Fractions: introduction-Solving Diophantine equations using continued Fractions.
٥- اساليب التعليم والتعلم:	1- Lectures *2-* Tutorials
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Final exam to assess a1-a4, b1-b3,c1-c3 2- Oral exam to assess a1-a4, b1-b3,d1-d3 3- Mid-Term Exam to assess a1,a3,a4, b1-b3, c1-c3
ب- التوقيت :	1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 6
ج- توزيع الدرجات :	- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	G.H. HARDY and E.M.WRIGHT (1975) An Introduction to the theory of Numbers.
ج- كتب مقترحة :	David M. Burton (2005) Elementary Number Theory, William Brown Publ.
د- دوريات علمية أو نشرات..	http://www.liv.ac.uk/maths/PURE/wipm.html http://www.archive.org/details/coursepuremath00hardrich

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Fundamentals: The division algorithm, The Euclidean algorithm, Diophantine equations, The Chinese Remainder Theorem.	1-2	a1,a3, a4	b1-b3	c1-c3	d1-d4
Prime numbers and their Distribution: The infinitude of primes. The fundamental theorem of arithmetic and unique factorization domains (viz "algebraic number theory"), Dirichlet's theorem.	3-4	a3	b1-b3	c1-c3	d1-d4
Theory of Congruencies:Congruence, Linear congruencies. Modular arithmetic and multiplicative inverses. Fermat's Factorization. Fermat's little theorem.Wilson's theorem.	5-6	a4	b1-b3	c1-c3	d1-d4
Euler's generalization of Fermat's Theorem Euler's phi-unction. Euler's theorem.	7-8	a3,a4	b1-b3	c1-c3	d1-d4
Introduction to algebraic number Theory. Ring of integers, ideals. Decomposition laws.	9-11	a4	b1-b3	c1-c3	d1-d4
Continued Fractions: introduction-Solving Diophantine equations using continued Fractions.	12-14	a2	b1-b3	c1-c3	d1-d4

أستاذ المادة :
رئيس مجلس القسم العلمى : أ.د. مجدى إلياس فارس

المستوى الرابع

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 413	اسم المقرر : Numerical Analysis II	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢ : تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Obtain approximations of the solutions of boundary value problems nonlinear systems of equations and obtain the solution of linear systems.
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 – be aware of some efficient and stable algorithms for finding roots of non-linear systems of equations. a2 – demonstrate knowledge and understanding on finding stable solution algorithms for boundary value problems. a3 – be familiar with the the iterative methods and their use in computing solutions of nonlinear equations. a4 – know and understand how the approximations of solutions of ordinary differential equations.
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- find roots of complicated nonlinear problems using MALAB. b2- apply modern methods, techniques, and pitfalls in scientific computing. b3- find approximate values of complicated integrals in one Dimension.
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1 - write programs with different languages C++, FORTRAN …and execute them to perform numerical problems. c2 - maintain existing numerical software. c3 - Use programming skills to solve ODE problems.
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1- work in team. d2- use the internet to search in Numerical Analysis Resources. d3- manage time.
٤ـ محتوى المقرر :	Power method for eigenvalues and eigenvectors. Solution of Linear System of Equations – Iterative Methods. 1. Elementary row operations and Gaussian elimination. 2. Jacobi, Gauss-Seidel and SOR methods. 3. ADI and dimensional splitting methods. 4. Multigrid. Least Square approximations and curve fitting. Approximation theory, Chebyshev poly. Fast Fourier transform. Numerical solution of nonlinear systems of Equation (Newton's method). Numerical solution for boundary value problems.
٥ـ أساليب التعليم و التعلم	1- Lecturers 2- Tutorials
٦ـ أساليب التعليم و التعلم للطلاب ذوى	**The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.**

القدرات المحدودة	
٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral Exam. to assess a1-a4, b1-b3,d1-d3 2- Final Exam to assess a1-a4,b1- b3,c1-c3 3- Mid-Term Exam to assess a1-a4, b1-b3, c1-c3
ب- التوقيت	1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	
ب- الكتب ملزمة	Burden R.L. and J. D. Faires, Numerical Analysis, Sixth edition, Brooks/Cole, Pacific Grove, CA, 1997.
ج- كتب مقترحة	Mathews, J. H., and K. D. Fink. Numerical Methods Using MATLAB®. 3rd ed.Prentice Hall, 1999.
د- دوريـــات علميـــة أو نشرات ... الخ	http://www.math.upenn.edu/~wilf/DeturckWilf.pdf http://www.damtp.cam.ac.uk/lab/people/sd/lectures/nummeth98/introduction.htm http://www.columbia.edu/~gb2030/COURSES/E6302/NumAnal.pdf

(أ)مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Power method for eigenvalues and eigenvectors.	1-2	a1,a2	b2	c1	d1,d2,d3
Solution of Linear System of Equations – Iterative Methods. 1. Elementary row operations and Gaussian elimination. 2. Jacobi, Gauss-Seidel and SOR methods. 3. ADI and dimensional splitting methods. 4. Multigrid.	3-5	a3,a4	b1,b2	c1,c2,c3	d1,d2,d3
Least Square approximations and curve fitting.	6-7	a2,a3,a4	b3	c2,c3	d1,d2,d3
Approximation theory, Chebyshev poly.	8-9	a1,a2	b1,b2	c2,c3	d1,d2,d3
Fast Fourier transform.	10	a4	b1,b2	c2,c3	d1,d2,d3
Numerical solution of nonlinear systems of Equation (Newton's method).	11	a1,a2	b1,b2	c2,c3	d1,d2,d3
Numerical solution for boundary value problems.	12-13	a3	b1,b2	c2,c3	d1,d2,d3

أستاذ المادة : أ.د. المتولى محمد العباسى

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلـــوم
قسم / الرياضيات

توصيف مقرر دراسى

١- بيانات المقرر		
كود المادة : Math 418	اسم المقرر : Lattice Theory	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** 1 - This course is basic course , it is intended for undergraduate students for mathematicians and computer science and others. One of the interesting applications of Boolean lattices in switching and logic circuits. 2 - Outline the basic information of advanced courses related with lattice theory such as universal algebra. 3 - In this course students learn all types of order such as partially order, totaly order, lattices, and others.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Understand all different types of lattices. a2 -Historical acknowledgement about lattice theory
ب – المهارات الذهنية	b- Intellectual Skills On completing this course, students will be able to: b1 - Recognize different kinds of lattices and its important properties. b2 -Distinguish and to analyze the properties of each type of latticess.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Learn how to determine the congruence lattice for an algebra in genaral for universal Algebras.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Transfer some natural problems to a certain type of lattices and solve d2- Learn how to use the properties of lattices.
٤- محتوى المقرر:	–Partially ordered, totally ordered and inductively ordered sets. –Lattice and complete lattice. –Sub lattices and direct product of lattices. –Lattices and ordered homomorphism and the other kinds of homeomorphisms –Distributive and Modular lattices. –Complemented lattices –Ideals and congruence relations.
٥- اساليب التعليم والتعلم:	1- Lectures 2- Tutorial
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Oral Exam. to assess 2- Final Exam to assess 3- Mid-Term Exam to assess
ب- التوقيت :	1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات :	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	1- Lecture Notes.
ب- كتب ملزمة	1 G. Birkhoff Lattice Theory , Americain math. Soc., Colloquium Publications, Vol. 25, Revised Edition, 1948. 2 - H. Gericke, Theore der Verbande, 2. Auflage, Hochschultachenbucher-Verlag, Bibliographisches Institut Mannheim, 1969. 3 - Gratzer, General Lattice Theory, 2nd Edition, Birkh?user (1998). 4 - H. Hermes, Einfuhrung in die Verbandstheorie, Die Grundlehen der mathematischen Wissenschaften in Einzeldaratellungen Band 73, 2 Auflage, Springer-Verlag Barlin Heidelberg New York., 1967. 5 - B. Nation, Notes on Lattice Theory, Internet.
ج- كتب مقترحة :	
د- دوريات علمية أو نشرات..	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Partially ordered, totally ordered and inductively ordered sets.	1-2	a1	b1	c1	a1
Lattice and complete lattice.	3 - 4	a1 & a2	a1&c1	a2 & c1	a1
Sub lattices and direct product of lattices.	5 - 6	b1 - b2	b1&b2	b1 & a2	b1 & a2
Lattices and ordered homomorphism and the other kinds of homeomorphisms	7 - 8	a1 & b1	a1&d1	a1 & d1	d1 & b2
Distributive and Modular lattices.	9 - 10	b1	a2&d2	a2 & d2	b1 & a2
Complemented lattices	11 -12	a1 & c1	d1&c2	d1 & c1	c1
Ideals and congruence relations.	13 -14	c1	d1&d2	d1 & d2	d2 & b2

أستاذ المادة : د. مجدى حكيم

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ ـ بيانات المقرر		
كود المادة : Math 421	اسم المقرر : Operation research	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ ـ هدف المقرر:	**For students undertaking this course, the aims are to:** - Provide a grounding in the major traditional areas of Operational Research/Management Science through a study of techniques and their application in a variety of business settings. - Familiarize the student with the OR methodology of problem solving and appraise its application in a range of problem situations.
٣ ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On successfully completing the course, students will be able to:** a1-Be aware of the Formulation of linear programming problems in management a2-Understand the ideal of modeling LP problems. a3-Know and understand how to use game theory concepts in our life.
ب ـ المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Solve linear programming problems graphically. b2-Apply linear programming techniques to various types of decision Problems. b3-Recognize the changing nature and role of OR in business.
ج ـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-Use the Matlab software package in solving linear programming problems. c2-Develop model building and problem solving skills. c3-Use the operational procedures to solve linear programming problems.
د ـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-Work as a team. d2- Solve problems d3-Manage their time.
٤ ـ محتوى المقرر :	- Introduction - Convex Analysis - Saddle point optimality criteria of nonlinear programming(withoutdifferentiability) - Optimality criteria in NPP (with differentiability) - The penalty function method - Duality in NPP - Linear Fractional Programming - Quadratic forms - The penalty function method - Duality in NPP - Linear Fractional Programming
٥ ـ أساليب التعليم و التعلم	1-Lectures 2- Tutorials
٦ ـ أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.

٧- تقويـــــم الطـــلاب :	
أ- الأساليب المستخدمة	1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a2,b1-b2,c1-c2 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2
ب- التوقيت	1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Available at the department
ب- الكتب ملزمة	Mangasarian, O. L, Nonlinear programming, McGrow-hill, New York (1969).
ج- كتب مقترحة	-Rao, S. S., Optimization Theory and Applications, Wiley Eastern limited, New Delhi (1985). -Mital, K. v. Optimization Methods in Operations Research and System analysis, Wiley Eastern limited, New Delhi (1987). -Bazaraa, M.S., Sherali, H. D., and Shatty, Nonlinear programming Theory and Algorithms, John Wiely and Sons, Inc., New York (1993).
د- دوريـــات علميـــة أو نشرات	http://en.wikipedia.org/wiki/Operations_research

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1: Introduction	1-2	a1,a3	b1		d1,d2,d3
2: Integer programming	3-4	a1,a3	b1	c1,c3	d1,d2
3: Convex Analysis	5	a1,a2,a3	b1,b2,b3	c1,c2,c3	
4: The nonlinear programming problem	6	a1,a3	b1,b3		d1,d2
5: Saddle point optimality criteria of nonlinear programming(without differentiability)	7	a1,a3	b1,b2,b3	c1,c3	d1,d2
6: Optimality criteria in NPP (with differentiability)	8	a1,a2	b1,b2,b3		
7: The Kuhn_ Tucker stationary point problem	9-10	a1,a2,a3	b1,b3	c1,c2	d1,d2
8: Quadratic forms	11	a1,a2,a3	b1,b2,b3		d1,d3
5: The penalty function method	12	a1,a2	b1,b3	c1,c2,c3	d1,d2
6: Duality in NPP	13	a1,a2	b1,b2	c1,c3	d1,d2
7: Linear Fractional Programming	14	a1,a2	b1	c1,c2	d2

أستاذ المادة : د/ سامح السعيد عبد العزيز عسكر

رئيس مجلس القسم العلمى : أ.د.مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 431	اسم المقرر : Statistical theory (2)	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1 - Study the hypothesis testing concerning one and two populations, tests concerning means, difference between means, proportion and difference between two proportions 2 - Study the hypothesis testing concerning the variance and the ratio of two variances 3 - Study the nonparametric tests 4 - Study the basic concepts in the theory of hypothesis testing 5 - Develop the methods for construction of Good tests
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1 - Explain the hypothesis testing concerning one population a2 - Explain the hypothesis testing concerning two populations a3 - Understand the Chi-square tests a4 - Understand the nonparametric tests a5 - Define the basic concepts in the theory of hypothesis testing a6 - Understand the methods for construction of Good tests
بـ المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1 - Distinguish between parametric and nonparametric tests b2 -Apply the Chi-square tests b3 - Distinguish between the methods for construction of Good tests
جـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1 - Describe the basic concepts in the theory of hypothesis testing c2 - compare between parametric and nonparametric tests c3 - Describe the methods for construction of Good tests
دـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1 -Work effectively in a group d2 - Solve problems on a scientific basis d3 - Search for information
٤ـ محتوى المقرر :	1- The hypothesis testing concerning one population (mean, proportion , variance) 2- The hypothesis testing concerning two populations (difference between two means, difference between two proportions , ratio of two variance) 3- Chi-square tests (Goodness-of-fit Test , independence and homogeneity tests) 4- Nonparametric tests (Sign Test, Wilcoxon test, Mann-Whitney Test,

Kruscal- Wallis test,Randominess test) 5- Basic concepts in the theory of hypothesis testing (simple hypothesis, composite hypothesis, Type I error and type II error, power function of the test, Uniformly most powerful test) 6- Methods for construction of Good tests (Neyman-Pearson theorem, Likelihood ratio test, Sequential probability ratio test)	
4.1 - Lectures 4.2 - Tutorials	**٥- أســـاليـــب التعليـــم و التعلـم**
Science students are usually normal. Therefore, no other teaching and learning methods are used.	**٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة**
٧- تقويـــــم الطـــلاب :	
1- Oral Exam. to assess b1-b3, c1-c3 , d2 2- Final Exam to assess a1-a6, b1-b3, c1-c3, d1-d3 3- Mid-Term Exam to assess a1-a3, b2	**أ- الأساليب المستخدمة**
1- Oral Eexam week 15 2- Final Exam week 15 3- Mid-Term Exam week 6	**ب- التوقيت**
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%	**ج- توزيع الدرجات**
٨- قائمة الكتب الدراسية و المراجع :	
Available at the department	**أ- المذكرات**
1 - Conover, W.J. Practical Nonparametric statistics, 2 ed. New York: John Wley &Sons, 1980 2 - John, Freund E. Modern Elementary Statistics. 5 ed. Englewood Cliffs, New Jersy: Prentice hall international Editions, 1979	**ب- الكتب ملزمة**
Bickel, Peter J. and Doksum, Kjell A. (2001). Mathematical Statistics: Basic and Selected Topics. I (Second (updated printing 2007) ed.). Pearson Prentice-Hall.	**ج- كتب مقترحة**
http://en.wikipedia.org/wiki/Statistical_theory	**د- دوريـات علميـة أو نشرات**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
The hypothesis testing concerning one population (mean, proportion , variance)	1-2	a1	b1	c2	d1-d3
The hypothesis testing concerning two populations (difference between two means, difference between two proportions , ratio of two variance)	3-4	a2	b1	c1	d1-d3
Chi-square tests (Goodness-of-fit Test , independence and homogeneity tests)	5-6	a3	b2	c1, c2	d1-d3
Nonparametric tests (Sign Test, Wilcoxon test, Mann-Whitney Test, Kruscal- Wallis test,Randominess test)	7-9	a4	b1, b2	c1, c2	d1-d3
Basic concepts in the theory of hypothesis testing (simple hypothesis, composite hypothesis, Type I error and type II error, power function of the test, Uniformaly most powerful test)	10-12	a5	b1, b2	c1, c2	d1-d3
Methods for construction of Good tests (Neyman-Pearson theorem, Likelihood ratio test, Sequential probability ratio test)	13-14	a6	b3	c3	d1- d3

أستاذ المادة : د محمد مصطفى جاد

رئيس مجلس القسم العلمى : أ.د.مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 441	اسم المقرر : Data Structure	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ١	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** • This course will introduce students to the use of various data structures. The data structures to be studied include lists, stacks, queues, trees, and graphs. • For these structures, generic operations and their efficiencies will be examined, as well as specific applications for these structures and operations. • Recursive algorithms will be studied, and searching techniques will be evaluated.
٣ـ المستهدف من التدريس المقرر:	
ت- المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Understand the basic of Big-O notation. a2- Understand the meaning of the different Abstract Data types used in developing advanced programs. a3- Understand the basic concepts of Lists and Stacks. a4- Understand the basic concepts of Queues and circular Queues. a5- Understand the basic concepts of trees and binary search trees a6- Understand the basic concepts of Graphs. a7- Understand mathematical models described in algebraic, analytical or topological terms.
ث- المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Be able to evaluate the complexity of algorithms. b2- use the Java interface construct to formally specify an ADT b3- Make use of appropriate data structures. b4- Ability to analyze mathematical models and assess their adequacy and solvability. b5- Ability to differentiate and select between methods of treatment of mathematical problems (numerical, analytical, symbolic … etc.).
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Be able to write efficient algorithms. c2- Translate abstract ideas into practice. c3- Use of data structures to represent data in real application. c4- Using computers and appropriate software to solve mathematical problems.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Participate in team-based activities. d2- Participate in team-based activities. Ability to gather material and problem solving methods.

d3- participate in team-based activities.
d4- computer skills: ability to use computer; internet.
d5- understanding of problem solving strategies.

٤-محتوى المقرر:

- Comparing Algorithms: Big-O Analysis
- Abstract data types (ADTs)
- The List and the Stack ADT
- The Queue ADT
- Trees and Binary search trees
- Graphs

٥-اساليب التعليم والتعلم:

4 -Lectures using data show and board.
4 - Home works, reports and discussion groups.
4 - Lab work.

٦-أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:

The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧-تقويم الطلاب :

أ- الأساليب المستخدمة :

-Student Assessment Methods

Final exam	to assess	All
Midterm exam	to assess	b1,b2, c1, c2, c3, c4, d3
Practical exam	to assess	A1,a2,a3,b3,c3,d3
Quizzes	to assess	.a1,a2, a3, b1,b2, b3
Report	to assess	A3,b3,c3,d3

ب- التوقيت :

Assessment Schedule

Assessment 1	Week #	3,5,9
Assessment 2	Week #	7
Assessment 3	Week #	13
Assessment 4	Week #	15,16
Assessment 5	Week #	11

ج- توزيع الدرجات :

Weighting of Assessments

Final-Term Examination	60
Midterm Examination	10
Practical Examination	20
Oral exam	10
Other types of assessment	0
Total	100

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:

ب- كتب ملزمة

ج- كتب مقترحة :

- Data Structures 7 Algorithms , 4th Edition,Michael T. Goodrich,Roberto Tamassia John Wiley & Sons, Inc., 2006 ISBN 978-0-471-73884-8
- Object-Oriented Data Structures Using JAVANell Dale, Daniel T. Joyce, and Chip Weems Jones & Bartlett, 2nd Edition, 2006 ISBN 0-7637-3746-7
- Data Structures with Java William Ford and William Topp Prentice Hall, 2005 ISBN 0-13-047724-9.

د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
• Comparing Algorithms: Big-O Analysis	1-2	a1	b1	c1	d1-
• Abstract data types (ADTs)	3-4	a2	b2	c2	d2
• The List and the Stack ADT	5-6	a3	b3	c3	d3
• The Queue ADT	7-9	**a4**	b3	c3	d3
• Trees and Binary search trees	10-11	**a5**	b3	c3	d3
• Graphs	12-13	**a6**	b3	c3	d3

أستاذ المقرر: د./محمود محمد أحمد عبد اللطيف

رئيس مجلس القسم العلمى : أ.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ ـ بيانات المقرر		
كود المادة : Math 442	أسم المقرر: Neural networks	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ١	

٢ ـ هدف المقرر:	**For students undertaking this course, the aims are to:** A) Introduce the fundamental principles and techniques of neural network systems. • What kind of structure or model should we use? • How to train or design the neural networks? • How to use neural networks for information acquisition? B) Investigate the principal neural network models and applications.
٣ ـ المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- know History and structure. a2- know Networks of Artificial Neurons. a3- Learn about different applications in the domain. a4-describe real world problems in mathematical terms; especially problems of theoretical physics and environmental science. a5-understand mathematical models described in algebraic, analytical or topological terms. a6-gain a detailed knowledge of the main areas of mathematics: Foundations, Algebra, Analysis, Geometry and Probability, Applied mathematics (particularly Newtonian mechanics, differential equations, numerical methods and linear algebra), with the opportunity also to meet some of: advanced calculus, fluid mechanics, advanced numerical analysis as well as some fields of applications.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- distinguish the structure of Single Layer. b2- evaluate the need for quantitative models in real world problems. b3- understand and evaluate the passage from the mathematical model to the computer simulation.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- work with logic programming language. c2- Learn and Generalize Single Layer. c3- Use the algorithm in small application. c4- apply it to small projects. c5-Use computers and appropriate software to solve mathematical problems. c6- Use statistical techniques and related software packages. c7- Present ideas and results in written and oral presentations.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Biological Neurons and Neural Networks.

d2- perform applications. d3- develop computer skills: use computer and internet. d4- develop self and long-life learning.	
• Introduction to Neural Networks. • Single Layer Perceptrons. • Multi-Layer Perceptrons. • Learning Algorithms. • Back Probagation Algorithm. • Conjugate Gradient Learning. • Application Single character recognition.	**٤- محتوى المقرر:**
1- Lecturing on board. 2- Having free discussions. 3- Asking the students some questions.	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
٧- تقويم الطلاب :	
1- Final exam to assess 2- Oral exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	**أ- الأساليب المستخدمة :**
1- Final exam week 16 2- Oral exam week 16 3- Mid-Term Exam week 7 4- Practical Exam week	**ب- التوقيت :**
- Mid-Term Examination 10% - Final-Term Examination 60% - Oral Examination 10% - Practical Examination 20% Total 100%	**ج- توزيع الدرجات :**
٨- قائمة الكتب الدراسية والمراجع :	
	أ- مذكرات:
- An Introduction to Neural Networks By K Gurney . Publisher :Routledge, 1997.	**ب- كتب ملزمة**
- Neural Networks: A Comprehensive Foundation By S. Haykin Prentice Hall, 1999.	**ج- كتب مقترحة :**
	د- دوريات علمية أو نشرات..

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
• Introduction to Neural Networks.	1,2	a1		c1	d1
• Single Layer Perceptrons.	3,4	a2	b1	c2	
• Multi-Layer Perceptrons.	5,6,7,8	a3		c3	d2
• Learning Algorithms, Back Probagation Algorithm.	9,10,11	a4	b2	c4,c5,	d3
• Conjugate Gradient Learning.	12	a5	b3	c6	d4
• Application Single characcter recognition.	13	a5,a6	b3	c7	d4

أستاذ المادة : د./حازم مختار مختار البكرى

رئيس مجلس القسم العلمي : ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 400	اسم المقرر : Essay of Research	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: 1 ساعة معتمدة نظرى : ١ تمارين: ٠ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Develop the student's independent study skills, writing skills, and presentation skills, as well as developing the student's ability to get to grips with a substantial piece of advanced mathematics through self-study and project supervision from a member of staff.
٣ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-demonstrate knowledge and understanding of different area of mathematics. a2-be aware of advanced mathematical topics. a3-develop skills on making a formal oral presentation. a4-know and understand how to produce original mathematics.
ب ـ المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Combine the skills acquired in other mathematics modules in the production of a suitable project. b2-develop skills in the use of computer tools for solving problems b3-develop skills on problem-solving .
ج ـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-Give an oral and visual presentation to a group of peers and staff. c2-receive instruction on appropriate use of library facilities. c3-write an interim report describing the mathematics learned, any other significant progress made.
د ـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-written and oral communication and presentation skills. d2-Solve problems. d3-Independent study and use of $L^{A}TEX$.
٤ـ محتوى المقرر :	Every student perform a project under supervisor of one the staff and at the end of second term write an essay about his work and student assessment will be taken by the staff.
٥ـ أساليب التعليم و التعلم :	1- Lectures(2H/W). 2- self study (including joint study facilitated by workshops) using some or all of a course notes.

٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.

٧- تقويـــــم الطـــلاب :

أ- الأساليب المستخدمة	1- Oral exam to assess a1-a4,b1-b3 2- Contineous discussions to assess a1-a4,d1-d3 3- Report to assess b1-b3,c1-c3
ب- التوقيت	1- Oral exam week 2- Contineous discussions weekly 3- Report week
ج- توزيع الدرجات	1- Oral exam 20% 2- Contineous discussions 20% 3- Report 60% Total 100%

٨- قائمة الكتب الدراسية و المراجع :

أ- المذكرات	
ب- الكتب ملزمة	
ج- كتب مقترحة	
د- دوريـــات علميـــة أو نشرات	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Every student perform a project under supervisor of one the staff and at the end of second term write an essay about his work and student assessment will be taken by the staff.	1-14	a1-a4	b1-b3	c1-c3	d1-d3

أستاذ المادة :اعضاء هيئة التدريس بالقسم

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١- بيانات المقرر		
كود المادة : Math 432	اسم المقرر: Stochastic Processes (1)	المستوى: الرابع
البرنامج : إحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر :	
For students undertaking this course, the aims are to: 1- Define the stochastic processes, the parameters and state space of the process, types of stochastic processes. 2- Study some examples of stochastic processes such that: Markov chains, Markov processes, Poisson processes, birth-death process, and branching processes. 3- Study some generalization of stochastic processes. 4- Solve some examples for our course as the revision.	
٣- المستهدف من تدريس المقرر	
a- Knowledge and Understanding **On completing this course, students will be able to:** a1-demonstrate knowledge and understanding on the different types of stochastic processes. a2- know and understand the properties of the Markov chains. a3-Understand the basic concepts of Poisson processes. a4-be aware of the types of Markov processes. a5-know the higher transition probabilities for the Markov chains. a6-be familiar with some processes such as branching process and birth-death process.	أ- المعلومات و المفاهيم :
b- Intellectual Skills **On completing this course, students will be able to:** b1-Distinguish between the types of the states for the Markov chain. b2-Distinguish between the types of the stochastic processes. b3-Use the transition probability matrix in solving problems in higher transition. b4- Determine the higher transition probabilities for the Markov chains.	ب- المهارات الذهنية :
c- Professional and Practical Skills **On completing this course, students will be able to:** c1- use the skills acquired from learning Markov chains and Markov processes to study biological phenomena. c2-calculate some statistical measures for the Poisson processes. c3-solve some problems related to the birth-death and branching processes.	ج- المهارات المهنية الخاصة بالمقرر :
d- General and Transferable Skills **On completing this course, students will be able to:** d1-Solve problems. d2-Work in team.	د- المهارات العامة:
1- Introduction in Stochastic processes 2- Markov Chain 3- Poisson Processes and Their Generalizations 4-Birth-Death Processes 5-Random walk 6- Branching Processes	٤- محتوى المقرر:

٥- أساليب التعليم و التعلم :	1-Lectures 2-Tutorials 3-working sheets 4- Quizzes
٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة	1- Oral Exam. to assess a1-a3,b1-b2,d1-d3 2- Final Exam to assess a1-a3,b1-b2,c1-c3 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2
ب- التوقيت	1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية و المراجع :	
أ- المذكرات	Available at the dept.
ب- الكتب ملزمة	1-Ross, M.S. (1970). Applied probability models with optimization applications. Holden-Day, San Francisco, USA. 2-Medhi, J (1981). Stochastic processes. Wiley Eastern Limited. 3- Ross, M.S. (1996). Stochastic processes. John Wiley & Sons, INC, 2nd Edition,third edition.
ج- كتب مقترحة	1-Ross, .S. Introduction to probability models. Fifth edition. 2-Taylor, H.M, An introduction to stochastic modeling.
د- دوريات علمية أو نشرات	http://en.wikipedia.org/wiki/Stochastic_process

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1-Introduction in Stochastic processes	1	a1	b2		
2-Markov Chain	2-5	a2,a5	b1,b3	c1	d1,d2
3-Poisson Processes and Their Generalizations	6-7	a3	b4	c2	d1
4-Birth-Death Processes	8-9	a6	b2	c3	d1
5-Random walk	10-11	a2	b3		d1
6-Branching Processes	12-13	a6	b2	c3	d1

أستاذ المادة : أ.د./ محمود طه ياسين

رئيس مجلس القسم العلمى : أ.د.مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 411	اسم المقرر : Theory of Differential Equations	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** 1. Students should understand the concept of a solution to an initial value problem, and the guarantee of its existence and uniqueness under specific conditions. 2. The student will recognize basic types of differential equations which are solvable, and will understand the features of linear equations in particular. 3. Students will learn to use geometrical approaches to investigate equations which are not easily solvable. In particular, the student will be familiar with phase plane analysis. 4. Students will become proficient with the notions of linearization, equilibrium, stability. They will learn to use the eigenvalue method for autonomous systems on the plane. 5. The students will develop skills in the use of computer tools for the study of differential equations.
٣ـ المستهدف من تدريس المقرر	
أـ المعلومات و المفاهيم :	**a-Knowledge and Understanding** **On completing this course, students will be able to:** a1 - demonstrate an understanding of differential equations and their solutions. a2 - be aware of the implications of existence and uniqueness theorems. a3 - interpret differential equations and their solutions in terms of models for various physical systems. a4- apply qualitative and quantitative methods to obtain solutions of differential equations to an appropriate level of accuracy. a5- Understand the applications of differential equations. a6- compute appropriate bases for the solution of linear algebra problems including orthogonal projections, linear transformations and eigenvalues and eigenvectors.
بـ المهارات الذهنية :	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1-distinguish between linear and non-linear differential equations and describe the properties of the solutions of linear differential equations. b2- develop skills in the use of computer tools for solving differential equations and integration. b3- represent curves and surfaces in space by parametric equations, or as a vector function of one or two variables. b4- communicate explanations and mathematical expositions in a clear and logical fashion.
جـ المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills**: **On completing this course, students will be able to:** c1 - Solve linear ODEs using standard methods. c2- describe the properties of the solutions of linear algebraic equations.

d-General and Transferable Skills: **On completing this course, students will be able to:** d1- work in team. d2- Solve problems. d3- Use Internet and library.	**د- المهارات العامة :**
• The existence and uniqueness theory. • Some concepts for real functions theory. • Dependence of solutions on I.C & function. • E&U Theorem for systems and higher order equations. • Basic theory of homogeneous and non homogenous linear systems. • Sturm theory. • System of linear differential equation basic theory and methods of solutions and Stability and Nonlinear systems in the Plane. • Linearization theorem. Lyapunov functions, Lyapunov method.	**٤- محتوى المقرر :**
1- Lectures (4H/W) 2- Tutorial (1H/w)	**٥- أساليب التعليم و التعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة**
٧- تقويم الطلاب :	
1- Oral Exam. to assess a1-a6, b1-b4,d1-d3 2- Final Exam to assess a1-a6,b1- b4,c1, c2 3- Mid-Term Exam to assess a1,a2,a3,a5, b1,b2, c1	**أ- الأساليب المستخدمة**
1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7	**ب- التوقيت**
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%	**ج- توزيع الدرجات**
٨- قائمة الكتب الدراسية و المراجع :	
Available in the Dept.	**أ- المذكرات**
C. H Edwards, Elementary differential equations with boundary value problems, Pearson Prentice Hall, 2004.	**ب- الكتب ملزمة**
1- W.E. Boyce & R.C. Di Prima, "Elementary Differential Equations and Boundary Value Problems", Wiley. 2- M. Braun, "Differential Equations and their Applications", Springer-Verlag. 3- R.K. Nagle & E.B. Saff, & A.D. Snider, "Fundamentals of Differential Equations and Boundary Value Problems", Addison-Wesley. 4- Ross , Theory of differential equations.	**ج- كتب مقترحة**
http://www.sosmath.com/diffeq/diffeq.html	**د- دوريات علمية أو نشرات ... الخ**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
The existence and uniqueness theory	1-2	a1,a2	b1		
Some concepts for real functions theory	3-4	a3	b1		
Dependence of solutions on I.C & function f	5	a3	b1	c1	d1, d2
E&U Theorem for systems and higher order equations	6-7	a3,a5	b2	c1	
Basic theory of homogeneous and non-homogenous linear systems	8-9	a3,a4	b3		
Sturm theory	10	a3	b1		
System of linear differential equation basic theory and methods of solutions and Stability and Nonlinear systems in the Plane Linearization theorem. Lyapunov functions, Lyapunov method.	11-13	a3,a4	b4	c2	d1,d2,d3

أستاذ المادة : أ د. على شمندى

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 414	اسم المقرر : Functional Analysis	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Familiarize the student with the basic concepts, principles and methods of Functional Analysis and its applications. Functional Analysis plays an important role in applied sciences as well as in mathematics itself. Generally speaking, Functional Analysis - Develops further the tools from Calculus and Linear Algebra to the more general setting where one has either vector spaces comprising functions or general abstract infinite-dimensional vector spaces. Problems from various application areas can then be conveniently posed in this common general set up, and solved using techniques of Functional Analysis.
٣ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**On completing this course, students will be able to:** a1 – Understand the main concepts in the theories of normed spaces and inner product spaces. a2 - Know the basic facts and definitions on Hilbert and Banach spaces and their duals. a3 - State and sketch the ideas of proofs of the following theorems and principles: Holder – Minkowski – Hahn - Schwarz – Riesz representation Th.
ب ـ المهارات الذهنية :	**On completing this course, students will be able to:** b1- construct rigorous proofs of different propositions and assertions in this context. b2- apply basic theorems for Hilbert and Banach spaces.
ج ـ المهارات المهنية الخاصة بالمقرر :	**On completing this course, students will be able to:** c1 - Extend Gram-Schmidt process to a wider class of functions. c2 - Investigate particular examples to which the theories under concern can be applied. c3 - Use lecture notes and other texts to solve challenging problems.
د ـ المهارات العامة :	**On completing this course, students will be able to:** d1- Solve problems. d2- Work both in a team and individually. d3- Use Internet and Library.
٤ـ محتوى المقرر :	• Metric spaces : definition, examples and well- known inequalities. • topology in metric spaces. • Normed spaces : definition and examples -convergence - Banach spaces and examples. • subspaces - separable spaces – linear hulls. • Bounded linear transformations and functionals. • Finite-dimensional normed spaces . • The algebra of bounded linear operators (an introductory account of the spectral aspect).

• Inner products : examples - Schwarz's inequality - parallelogram law – Hilbert spaces and examples. • Orthogonality in Hilbert spaces - Riesz's representation Theorem - Gram-Schmidt process . • The adjoint operator - properties - self-adjoint bounded linear operators • Positive operators - properties – the spectrum, eigenvalues and eigen vectors. • Orthogonal projections.	
1- lectures. 2- Tutorials. 3- Quiz sheets.	**٥- أســـاليـــب التعليـــم و التعلـم :**
The same as for normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــدودة :**
٧- تقويـــــم الطـــلاب :	
1- Oral Exam. to assess a1-a3,b1-b2,d1-d3 2- Final Exam to assess a1-a3,b1-b2,c1-c3 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2	**أ- الأساليب المستخدمة**
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7	**ب- التوقيت**
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%	**ج- توزيع الدرجات**
٨- قائمة الكتب الدراسية و المراجع :	
- Lecture Notes.	**أ- المذكرات**
	ب- الكتب ملزمة
1] W. Rudin, Functional Analysis, McGraw--Hill (1973). [2] F. Riesz and B. Sz.-Nagy, Functional Analysis, Dover (1990). [3] R.F. Curtain and A.J. Pritchard, Functional Analysis in Modern Applied Mathematics, Academic Press (1977). [4] A.L.Brown &A.Page"Elements of Functional Analysis", London, 1970.	**ج- كتب مقترحة**
http://www.mth.uea.ac.uk/~h720/teaching/functionalanalysis/materials/FAnotes.pdf http://www.math.nyu.edu/phd_students/vilensky/Functional_Analysis.pdf	**د- دوريـــات علميـــة أو نشرات**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Metric spaces : definition, examples and well-known inequalities.	1	a1	b1		d1
topology in metric spaces.	2	a1	b1	c1	d1
Normed spaces : definition and examples - convergence - Banach spaces and examples.	3	a1,a2	b1	c1	d1,d2
subspaces - separable spaces - linear hulls.	4	a1,a2	b2	c1	d1,d2
Bounded linear transformations and functionals .	5-6	a1,a2	b2	c1,c2	d1
Finite-dimensional normed spaces .	7	a1,a2	b2	c1,c2	d1,d2
The algebra of bounded linear operators (an introductory account of the spectral aspect).	8-9	a1,a2	b2	c1,c2	d1,d2
Inner products : examples - Schwarz's inequality - parallelogram law - Hilbert spaces and examples.	10	a1, a2	b2	c1,c2	d1,d2
Orthogonality in Hilbert spaces - Riesz's representation Theorem - Gram-Schmidt process .	11	a1,a2,a3	b2	c1,c2	d2,d3
The adjoint operator - properties - self-adjoint bounded linear operators.	12	a1,a2,a3	b1, b2	c2,c3	d2,d3
Positive operators - properties - the spectrum, eigenvalues and eigen vectors.	13	a1,a2,a3	b1, b2	c2,c3	d2,d3
Orthogonal projections .	14	a1,a2,a3	b1, b2	c1,c2,c3	d1,d2,d3

أستاذ المادة : د. محمد سمير قاسم

رئيس مجلس القسم العلمي :ا.د. مجدى إلياس فارس

جامعة: المنصـورة
كـــلية : العلـــوم
قسم / الرياضيـات

توصيف مقرر دراسى

١ـ بيانات المقرر		
كود المادة : Math 426	اسم المقرر : Modeling and Simulations	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢ـ هدف المقرر:	**For students undertaking this course, the aims are to:** • Give an introduction to Simulation and Modeling. • Revise the basics of Probability Theory. • Generate Random Numbers. • Generate Random Variaties. • Analyze the output. • Introduce queuing theory.
٣ـ المستهدف من التدريس المقرر:	
أ ـ المعلومات والمفاهيم:	**a- Knowledge and Understanding:** **On completing this course, students will be able to:** a1- Know the nature of simulation. a2- know different random variable both continuous and discrete. a3- Learn different types for generating random numbers. a4- describe real world problems in mathematical terms; especially problems of theoretical physics and environmental science. a5- learn the basic techniques of computer simulation and programming.
ب ـ المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- tackle modeling problems. b2- calculate the mean , variene and correlation of random variables. b3- know the different between true, psudo, and quai random numbers. b4- evaluate the need for quantitative models in real world problems. b5- differentiate and select between methods of treatment of mathematical problems (numerical, analytical, symbolic … etc.).
ج ـ المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- model simple problems. c2- write programs to find the above in b2. c3- implement different methods for generating random numbers. c4- Use computers and appropriate software to solve mathematical problems. c5- Present ideas and results in written and oral presentations.
د ـ المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- model simple problems. d2- know how to find them for real problems. d3- know which generator to use. d4- use computer and internet. d5- Understand the relevance of Science to national development.

d6- understand problem solving strategies. d7- Recognize the value of numeracy in the precise statement of ideas.	
• Introduction to Basic Simulation Modeling • Revision of Basic probability • Random Number Generators • Generating random Variates • Output Data Analysis	٤- محتوى المقرر:
1-Lectures using data show and board 2-Home works, reports and discussion groups	٥- اساليب التعليم والتعلم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:
٧- تقويم الطلاب :	
1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a3,b1-b3,c1-c3 3- Mid-Term Exam to assess a1,a2,b1,b2	أ- الأساليب المستخدمة :
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7	ب- التوقيت :
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%	ج- توزيع الدرجات :
٨- قائمة الكتب الدراسية والمراجع :	
	أ- مذكرات:
	ب- كتب ملزمة
Simulation Modeling and Analysis by Averill Law, W. Kelton.	ج- كتب مقترحة :
http://en.wikipedia.org/wiki	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Introduction to Basic Simulation Modeling	1-2	a1	b1	c1	d1
Revision of Basic probability	3-5	a2	b2	c2	d2
Random Number Generators	6-9	a3	b3	c3	d3
Generating random Variates	10-11	a3	b3	c3	d3
Output Data Analysis	12-13	a4	b4-	c4	d4

أستاذ المادة : د./منتصر أحمد طه سعفان

رئيس مجلس القسم العلمي : ا.د. مجدى الياس فارس

جامعة: المنصـــورة
كـــلية : العلـــــوم
قسم / الرياضيـــات

١- بيانات المقرر		
كود المادة : Math 434	اسم المقرر : Analysis of Variance	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** •
٣- المستهدف من التدريس المقرر:	
أ- المعلومات والمفاهيم:	**a- Knowledge and Understanding:** **On completing this course, students will be able to:** a1-
ب- المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1-
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1-
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1-
٤- محتوى المقرر:	1- One–way ANOVA, balanced and non-balanced designs. 2- Two –way ANOVA, with fixed effect and interaction.
٥- اساليب التعليم والتعلم:	1-Lectures using data show and board 2-Home works, reports and discussion groups
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a3,b1-b3,c1-c3 3- Mid-Term Exam to assess a1,a2,b1,b2

ب- التوقيت :	1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات :	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
ب- كتب ملزمة	
ج- كتب مقترحة :	
د- دوريات علمية أو نشرات..	http://en.wikipedia.org/wiki

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- One–way ANOVA, balanced and non-balanced designs.					
2- Two –way ANOVA, with fixed effect and interaction.					

أستاذ المادة : أ.د./محمود طه السيد ياسين

رئيس مجلس القسم العلمي : ا.د. مجدى الياس فارس

جامعة: المنصـــورة
كـــلية : العلـــــوم
قسم / الرياضيـــات

١- بيانات المقرر		
كود المادة : Math 435	اسم المقرر : Time Series & Forecasting	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** - Introduce the principle of theory, methods and applications of analyzing time series data
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Understand the important features of a time plot. a2 - State the definitions of stationarity, the autocovariance and the autocorrelation functions for stationary time series models. a3 - Understand a time series model with deterministic trend and seasonality and a stochastic component, and know the methods for eliminating trend and seasonality. a4 - Understand autoregressive (AR), moving average (MA) and ARMA models, and evaluate their properties. a5 - Understand the parameter estimation methods for ARMA models. a6 - State the definition of an autoregressive integrated moving average model, evaluate its properties and understand the model-building steps
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1 - Distinguish between different types of time plot b2 -Distinguish between stationary and non-stationary time plot b3 - Apply the methods of elimination of trend and seasonality b4 - Distinguish between different types of ARMA models b5 - Apply the methods of forecasting
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1 - Differentiate between different types of time series. c2 - Choose and classify ARMA models c3 - Critically calculate the autocovariance and autocorrelation for different models c4 - Apply the methods of forecasting
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1 -Work effectively in a group d2 - Solve problems on a scientific basis d 3 - Collect and analyze the data d4 - Present the data in graphical form using IT methods d5 - management of self time, data knowledge d6 - Search for information

٤- محتوى المقرر:	– Introductory definitions and examples. Simple descriptive techniques: time plot; deterministic trend and seasonality – Time series as a stationary stochastic process: autocovariance and autocorrelation functions – Elimination of trend in the absence of seasonality: least squares estimation; smoothing by a moving average; differencing. Elimination of trend and seasonality: small trend method; classical decomposition; differencing at lag d – Development of AR(p) and MA(q) models in general and their detailed study for the case of p=1, q=1 . Introduction to ARMA models. – Estimation of the mean, and autocovariance and autocorrelation functions. Bartlett's formula . Approximate confidence bounds. – General ARMA process: Parameter redundancy; causality; invertibility – Model identification using the ACF and PACF. – Forecasting ARMA processes: one-step-ahead prediction ; m-step-ahead prediction – Estimation of parameters by moments, least squares and maximum likelihood methods. – Autoregressive integrated moving average (ARIMA) model: fitting ARIMA models; seasonal
٥- اساليب التعليم والتعلم:	1-Lectures 2- Tutorial
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.
٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Oral Exam. to assess a1-a6, b1-b5, c1-c4, d2 2- Final Exam to assess a1-a6, b1, b2, b4 3- Mid-Term Exam to assess a1-a3, b1-b3, c1
ب- التوقيت :	1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 6
ج- توزيع الدرجات :	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	1 - Department notes
ب- كتب ملزمة	1 - Brockwell, P.J and Davis, R.A, Time Series: Theory and Methods, 2nd edition, Springer, 1991 2 - Chatfield, C, The Analysis of Time Series: An Introduction, 6th edition, Chapman and Hall, 2004
ج- كتب مقترحة :	1 - Brockwell, P.J and Davis, R.A, An Introduction to Time Series and Forecasting, 2nd edition, Springer, 2002
د- دوريات علمية أو نشرات..	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Introductory definitions and examples. Simple descriptive techniques: time plot; deterministic trend and seasonality	1	a1	b1	c1	d2, d4, d5
Time series as a stationary stochastic process: autocovariance and autocorrelation functions	2	a2	b2	c1	d1, d6
Elimination of trend in the absence of seasonality: least squares estimation; smoothing by a moving average; differencing. Elimination of trend and seasonality: small trend method; classical decomposition; differencing at lag d	3-4	a3	b3	c1	d1, d2, d6
Development of AR(p) and MA(q) models in general and their detailed study for the case of p=1, q=1 . Introduction to ARMA models.	5-6	a4	b4	c2	d6
Estimation of the mean, and autocovariance and autocorrelation functions. Bartlett's formula . Approximate confidence bounds.	7	a4	b4	c2	d2, d6
General ARMA process: Parameter redundancy; causality; invertibility	8-9	a2, a4	b4	c2	d2, d6
Model identification using the ACF and PACF.	10	a4	b2, b4	c3	d1, d6
Forecasting ARMA processes: one-step-ahead prediction ; m-step-ahead prediction	11-12	a5	b5	c4	d1, d6
Estimation of parameters by moments, least squares and maximum likelihood methods.	13	a5	b5	c4	d1, d2, d6
Autoregressive integrated moving average (ARIMA) model: fitting ARIMA models; seasonal	14	a6	b5	c4	d6

أستاذ المادة : د/ فاتن عبد الله حافظ شيحه

رئيس مجلس القسم العلمي : ا.د.مجدى الياس فارس

جامعة: المنصـــورة
كـــلية : العلـــــوم
قسم / الرياضيـــات

١- بيانات المقرر		
كود المادة : Math 443	اسم المقرر : Computer Graphics	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ١	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** (1) Study graphics Hardware includes brief information about the components of interactive graphics system. (2) Study graphics Software includes how to deal with output primitives of scenes such as scan converting algorithms, 2-dimensional geometry transformations and their matrix representations and efficient clipping algorithms for viewing objects.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Understand what are computer graphics. a2- Define computer graphics applications and interactive graphics system. a3- Apply scan converting algorithms for regular and irregular geometric shapes. a4- Apply algorithmic aspects of clipping operation on viewing pictures. a5- Apply the constructive algorithms using numerical values.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- apply methods for scan converting complex scenes. b2- understand the principles of animations. b3- write C++ programs for given computer graphic algorithms. b4- think about the importance of subjects introduced in the other computer sciences.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Apply scan-conversion methods on objects. c2- Apply clipping operations on viewports. c3- Clarify the principle motions, and shearing of geometric objects. c4- code efficient C++ of the teached algorithms.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- analyze the scenes and apply suitable scan-converting methods to view on the computer devices. d2- Increase the experience of constructing efficient algorithms. d3- Increase the experience of modifying the presented algorithms to do some special tasks.
٤- محتوى المقرر:	**- Introductory to computer graphics:** • Computer graphics and their applications.

• Elements of pictures created in computer graphics. • Interactive graphics system. **- Output primitives and scan conversion** • Algorithms for scan-converting of points and lines. • Circle generating algorithms. • Ellipse-generating algorithms. • Other curves and Filled-area primitives. • Scan-converting of characters. **- Two Dimensional viewing** • A window-to-viewport coordinates transformation. • Studying of clipping operations. • Efficient clipping algorithms for viewing objects such as lines, polygons, curves, and texts.	
1- Lectures 2- tutorial	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
	٧- تقويم الطلاب :
1- Oral Exam. to assess 2- Final Exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	**أ- الأساليب المستخدمة:**
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 6 4- Practical Exam week 14	**ب- التوقيت :**
- Mid-Term Examination 10 - Final-Term Examination 60 - Oral Examination 10 - Practical Examination 20 Total 100%	**ج- توزيع الدرجات :**
	٨- قائمة الكتب الدراسية والمراجع :
	أ- مذكرات:
1-"Computer graphics," The note book of Academic Staff of Computer Science, Mathematics Department, Faculty of Science, Mansoura University. (2004-2005).	**ب- كتب ملزمة**
1-"Computer Graphics C version," Hearn, D. and Baker, M. P., Prentice hall, Upper Saddle River, New Jersey, (1997).	**ج- كتب مقترحة :**
	د- دوريات علمية أو نشرات..

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Introductory to computer graphics:					
• Computer graphics and their applications.	1	a1			
• Elements of pictures created in computer graphics.	2	a1	b4		d2
• Interactive graphics system.	3	a2	b4		d2
- Output primitives and scan conversion					
• Algorithms for scan-converting of points and lines.	4	a3	b1	c1,c4	d1,d2
• Circle generating algorithms.	5	a3	b1	c1,c4	d1,d2
• Ellipse-generating algorithms.	6	a3,a5	b1	c1,c4	d1,d2
• Other curves and Filled-area primitives.	7	a3	b1	c1,c4	d1,d2
• Scan-converting of characters.	8	a3,a5	b2	c1	d1,d2
Two Dimensional viewing					
• A window-to-viewport coordinates transformation.	9	a4		c2	d1,d3
• Studying of clipping operations.	10	a4	b4	c2	d1,d3
• Efficient clipping algorithms for viewing objects such as lines, polygons, curves, and texts.	11-12	a4,a5	b3	c2,c4	d1,d2,d3

أستاذ المادة : د/ عبد الحميد فوزى عبد الحميد ابراهيم

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة: المنصـــورة
كـــلية : العلـــــوم
قسم / الرياضيـــات

١- بيانات المقرر		
كود المادة : Math 444	اسم المقرر :Design and Analysis of Algorithms	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ٠ عملى: ٢	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** 1. Demonstrate of the knowledge and understanding of the essentials and theories of mathematics and basic sciences, in general, relevant to CS. 2. Define the requirements of the algorithms. 3. Apply computational and mathematical skills in building efficient algorithms and programs. 4. Understand the theories and methods applied for making a program in any programming language. 5. Understand the heapsort and quick sort algorithms.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Describe the principle of algorithms to produce a well program. a2- Recognize the elements used in algorithms. a3- Identify the different type of algorithms. a4- Identify the role of each of them.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Select the suitable algorithm for solving problems. b2- Study an algorithm that judges validity of mathematical arguments as sorting algorithms.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Solve problems using a range of formats and approaches. c2- Design, write and debug computer programs in appropriate languages along with using appropriate algorithms.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Consider community linked problems, ethics and traditions. d2-Utilize and apply suitable strategies to accomplish well algorithm for program. d3- Prove that this algorithm is the best for this program.
٤- محتوى المقرر:	The Role of Algorithms in Computing, Getting Started. Algorithms complexity, Growth of Functions. Recurrences, Probabilistic Analysis and Randomized Algorithms. Heapsort, Maintaining the heap property, The heapsort algorithm. Quicksort
٥- اساليب التعليم	1- Lectures.

2- Tutorial.	والتعلم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:
	٧- تقويم الطلاب :
1- Oral Exam. to assess 2- Final Exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	أ- الأساليب المستخدمة :
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 6 4- Practical Exam week 14	ب- التوقيت :
- Mid-Term Examination 10 - Final-Term Examination 60 - Oral Examination 10 - Practical Examination 20 Total 100%	ج- توزيع الدرجات :
	٨- قائمة الكتب الدراسية والمراجع :
	أ- مذكرات:
Introduction to Algorithms (2nd Ed.) by Thomas Cormen, Charles Leierson, Ronald Rivest, and Clifford Stein; McGraw-Hill, 2001, ISBN 0-07013151-1. Sara Base, Allen Van Gelder, Computer Algorithms Introduction to Design & Analysis, Third Edition, Addison Wesley Longman 2000. Steven Skiena, The Algorithm Design Manual, Springer-Verlag New York, Inc., 1998.	ب- كتب ملزمة
	ج- كتب مقترحة :
	د- دوريات علمية أو نشرات..

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
The Role of Algorithms in Computing, Getting Started.	1-2	a1-a4			d1
Algorithms complexity, Growth of Functions.	3	a3			
Recurrences, Probabilistic Analysis and Randomized Algorithms.	4-6		b2	c2	d3
Heapsort, Maintaining the heap property, The heapsort algorithm.	7-10	a4	b1,b2	c1,c2	d3
Quicksort.	11-13	a4			d1,d2

أستاذ المادة : د/ محمد فتحي حامد الرحماوى

رئيس مجلس القسم العلمي : ا.د. مجدى الياس فارس

جامعة : المنصورة
كـــلية : العلـــوم
قسم / الرياضيات

١- بيانات المقرر		
كود المادة : Math 412	اسم المقرر : Graph Theory	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** - Outline the basic information of advanced courses related with graph theory. - Introduce the principles and basic concepts of the different types of graphs. - Use graphs to translate the problems in the other topics to a graph. - Enable the students to use the properties of graphs to find a solution for their problems.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- Historical acknowledgement about graph theory. a2- Understand all different types of graphs, and digraphs. . a3- Recognize different kinds of graphs and its important properties.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Distinguish and to analyze the properties of each type of graphs. b2- Apply the main theorems of each type of graphs.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- Learn how to use the properties of graphs to differentiate and compare between the required graphs. c2- Learn how to choose the suitable graph for the required topic.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- Use graphs to solve some problems and to present the data in graphical form. d2- Transfers some natural problems to a certain type of graphs and solve it .
٤- محتوى المقرر:	1- Introduction to graph theory. 2- Simple, Multi, general, regural, bipartite graphs and other kinds of graphs. 3- Basic concepts: adjacent, incident, degree of vertices. 4- Subgraphs: spanning, induced subgraphs. 5- Walks, trails, paths, cycles, circuts. 6- Grith, Circumference, geodesics, distances and diameters of graphs. 7- Operations on graphs: deleting and adding vertices and edges. 8- Relation between graphs: isomorphisms. 9- Connected and disconnected graphs. 10- Planar and plane graphs.11- Trees: binary trees and n-ary trees. 12- Directed graphs and concepts in dericted graphs: indegree and outdegree and directed walks. 13- Roted trees and its applications. 14- Relation between matrices and graphs.
٥- اساليب التعليم والتعلم:	1- Lectures 2- Tutorial.
٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:	The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.

٧- تقويم الطلاب :	
أ- الأساليب المستخدمة :	1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a2,b1-b2,c1-c2 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2
ب- التوقيت :	1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7
ج- توزيع الدرجات :	- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%
٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	Lecture Notes.
ب- كتب ملزمة	1- Frank Harary, Graph Theory, addison-Wesly publishing company, USA, Canada, 1972.. 2- G. Chartraud & L. Lesniak, Graphs & Digraphs, 2nd Edition, Wadsworth & Books/Cole, Math. Series, Pacific Grove, California.
ج- كتب مقترحة :	1- Graph Theory, Coding theory and Block Designs by P.J. Comeron & J.H. Van lint.-2-Graph Theory with Applications to Engineering and Computer Science by Narsingh Deo. 3- Mathematics with applications by Gareth Williams.
د- دوريات علمية أو نشرات..	- http://www.utm.edu/departments/math/graph.

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Introduction to graph theory.	**1**	a1			
2- Simple, Multi, general, regural, bipartite graphs and other kinds of graphs.	2	a2	b1		d1&d2
3- Basic concepts: adjacent, incident, degree of vertices.	3	a2	b1		d1&d2
4- Subgraphs: spanning, induced subgraphs.	4	a2	b2	c1	d1
5- Walks, trails, paths, cycles, circuts.	5	a2	b2	c1	d1
6- Grith, Circumference, geodesics, distances and diameters of graphs.	6	a2	b2	c1	d1
7- Operations on graphs: deleting and adding vertices and edges.	7	a2& a3	b1, b2	c1& c2	d1
8- Relation between graphs: isomorphisms.	8	a2& a3	b1, b2	c2	d1
9- Connected and disconnected graphs.	9	a2& a3	b1	c1	d1
10- Planar and plane graphs.	10	a2	b1	c1	d1,d2
11- Trees: binary trees and n-ary trees.	11	a2& a3	b1	c1, c2	d1,d2
12- Directed graphs and concepts in dericted graphs: indegree and outdegree and directed walks.	12	a2& a3	b2	c1, c2	d1&d2
13- Roted trees and its applications.	13	a2& a3	b2	c1, c2	d1&d2
14- Relation between matrices and graphs.	14	a3	b1,b2	c2	d1&d2

أستاذ المادة : ا.د/ مجدى حكيم

رئيس مجلس القسم العلمي : ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 400	اسم المقرر : Essay of Research	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ١ ساعة معتمدة نظرى :١ تمارين: ٠ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - Develop the student's independent study skills, writing skills, and presentation skills, as well as developing the student's ability to get to grips with a substantial piece of advanced mathematics through self-study and project supervision from a member of staff.
٣ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-demonstrate knowledge and understanding of different area of mathematics. a2-be aware of advanced mathematical topics. a3-develop skills on making a formal oral presentation. a4-know and understand how to produce original mathematics.
ب ـ المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-Combine the skills acquired in other mathematics modules in the production of a suitable project. b2-develop skills in the use of computer tools for solving problems b3-develop skills on problem-solving .
ج ـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-Give an oral and visual presentation to a group of peers and staff. c2-receive instruction on appropriate use of library facilities. c3-write an interim report describing the mathematics learned, any other significant progress made.
د ـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-written and oral communication and presentation skills. d2-Solve problems. d3-Independent study and use of $L^{A}TEX$.
٤ـ محتوى المقرر :	Every student perform a project under supervisor of one the staff and at the end of second term write an essay about his work and student assessment will be taken by the staff.
٥ـ أساليب التعليم و التعلم :	3- Lectures(2H/W). 4- self study (including joint study facilitated by workshops) using some or all of a course notes.

٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة	The same as normal students, only skeletal disabilities are allowed in the faculty of science.

٧- تقويـــــم الطـــلاب :

أ- الأساليب المستخدمة	1- Oral exam to assess 2- Contineous discussions to assess 3- Report to assess
ب- التوقيت	1- Oral exam week 2- Contineous discussions weekly 3- Report week
ج- توزيع الدرجات	1- Oral exam 20% 2- Contineous discussions 20% 3- Report 60% Total 100%

٨- قائمة الكتب الدراسية و المراجع :

أ- المذكرات	
ب- الكتب ملزمة	
ج- كتب مقترحة	
د- دوريـــات علميـــة أو نشرات	

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Every student perform a project under supervisor of one the staff and at the end of second term write an essay about his work and student assessment will be taken by the staff.	1-14	a1-a4	b1-b3	c1-c3	d1-d3

أستاذ المادة :اعضاء هيئة التدريس بالقسم

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 436	اسم المقرر : Reliability Theory	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى :٢ تمارين: ١ عملى: ٠	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:**
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-
ب- المهارات الذهنية :	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-
د- المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-
٤ـ محتوى المقرر :	1. Introduction to reliability theory 2. Network modeling and evaluation of simple systems - Network modeling concepts- Series and Parallel systems- Series-parallel systems- Partially redundant systems- Standby redundant systems. 3. Network modeling and evolution of complex systems- Modeling and evolution concepts- Conditional probability approach- Cut set method -Tie set method- Event trees. 4. Probability distributions in reliability evaluation- General reliability functions- Evaluation of the reliability functions- Shape of reliability functions- The Poisson distribution- The normal distribution- The exponential distribution- The weibull

distribution-The gamma distribution. 5- System reliability evaluation using probability distributions.	
1- Lectures 2- Tutorial.	٥- أســـاليـــب التعليـــم و التعلـم :
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة
٧- تقويـــــم الطـــلاب :	
1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a2,b1-b2,c1-c2 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2	أ- الأساليب المستخدمة
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7	ب- التوقيت
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
	أ- المذكرات
	ب- الكتب ملزمة
	ج- كتب مقترحة
	د- دوريـــات علميـــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1. Introduction to reliability theory					
2. Network modeling and evaluation of simple systems - Network modeling concepts- Series and Parallel systems- Series-parallel systems- Partially redundant systems- Standby redundant systems.					
3. Network modeling and evolution of complex systems- Modeling and evolution concepts- Conditional probability approach- Cut set method -Tie set method- Event trees.					
4. Probability distributions in reliability evaluation- General reliability functions- Evaluation of the reliability functions- Shape of reliability functions- The Poisson distribution- The normal distribution- The exponential distribution- The weibull distribution-The gamma distribution.					
5- System reliability evaluation using probability distributions.					

أستاذ المادة :

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

جامعة : المنصورة
كلية : العلـــــوم
قسـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 445	اسم المقرر :Image Processing	المستوى: الرابع
التخصص : الإحصاء وعلوم الحاسب	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى :١ تمارين: ٠ عملى: ١	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:**
٣ـ المستهدف من تدريس المقرر	
أ ـ المعلومات و المفاهيم :	**a- Knowledge and Understanding** **On completing this course, students will be able to:** a1-
ب ـ المهارات الذهنية:	**b- Intellectual Skills** **On completing this course, students will be able to:** b1-
ج ـ المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **On completing this course, students will be able to:** c1-
د ـ المهارات العامة :	**d- General and Transferable Skills** **On completing this course, students will be able to:** d1-
٤ـ محتوى المقرر :	1- fundamentals (What is digital image processing-Digital image representation-Image types). 2- Intensity transformatins function(Histogram processing- Spatial filtering). 3- Image restoration(A model of the image degradation- Noise models - Direct inverse filtring). 4- Color image processing(Color image representation-Converting to other color spaces-Color transformatins). 5- Image compression(Coding redundancy- Interpixel redundancy- JPEG compression). 6- Image segmentation(Point, line and edge detection – Thresholding - Region-Based segmentation).

7- Wavelets(The Fast wavelet Transform- Wavelet decomposition structures- Wavelet in image processing).	
1- Lectures 2- Tutorial.	٥- أســـاليـــب التعليـــم و التعلـم :
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحدودة

٧- تقويـــــم الطـــــلاب :

1- Oral Exam. to assess 2- Final Exam to assess 3- Mid-Term Exam to assess 4- Practical Exam to assess	أ- الأساليب المستخدمة
1- Oral Exam week 16 2- Final Exam week 16 3- Mid-Term Exam week 6 4- Practical Exam week 14	ب- التوقيت
- Mid-Term Examination 10 - Final-Term Examination 60 - Oral Examination 10 - Practical Examination 20 Total 100%	ج- توزيع الدرجات

٨- قائمة الكتب الدراسية و المراجع :

	أ- المذكرات
	ب- الكتب ملزمة
	ج- كتب مقترحة
	د- دوريـــات علميـــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- fundamentals (What is digital image processing- Digital image representation-Image types).					
2- Intensity transformatins function(Histogram processing- Spatial filtering).					
3- Image restoration(A model of the image degradation- Noise models - Direct inverse filtring).					
4- Color image processing(Color image representation- Converting to other color spaces- Color transformatins).					
5- Image compression(Coding redundancy- Interpixel redundancy- JPEG compression). decomposition structures- Wavelet in image processing).					
6- Image segmentation(Point, line and edge detection – Thresholding - Region-Based segmentation).					
7- Wavelets(The Fast wavelet Transform- Wavelet					

أستاذ المادة : حازم مختار مختار البكرى

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس

المقررات غير الكاملة

كود المقرر	المستوى	أسم المقرر	ما ينقصه
Math 216	الثانى	تفاضل عالى	مصفوفة المقرر
Math217	الثانى	مقدمة فى المنطق	المقرر بالكامل
Math 242	الثانى	جبر الحاسب	مصفوفة المقرر
Math 266	الثالث	ميكانيكا تحليلية	المقرر بالكامل
Math 328	الثالث	معادلات فرقية ٢	مصفوفة المقرر
Math 341	الثالث	برمجة هيكلية	المصفوفة + طرق التقييم
Math 342	الثالث	نظم قواعد البيانات	المصفوفة + طرق التقييم
Math 347	الثالث	مواضيع مختارة فى الحاسب (١)	المقرر بالكامل
Math 334	الثالث	تحليل الانحدار	المقرر بالكامل
Math 343	الثالث	أنظمة جبر الحاسب	المقرر بالكامل
Math 344	الثالث	ذكاء اصطناعى ونظم خبيرة	المصفوفة + طرق التقييم
Math 345	الثالث	نظم التشغيل	طرق التقييم
Math 445	الرابع	معالجة الصور	المقرر بالكامل
Math 436	الرابع	نظرية الموثوقية	المقرر بالكامل
Math 418	الرابع	نظرية الشبكات	تعديل المصفوفة
Math 434	الرابع	تحليل التباين	المقرر بالكامل
Math 443	الرابع	نظم الرسم بالحاسب	طرق التقييم
Math 444	الرابع	تصميم وتحليل الخوارزميات	طرق التقييم
Math 442	الرابع	شبكات عصبية	طرق التقييم