



Course specification

University/Academy: Damanhour University

Faculty/Institute: Science

Department: Mathematics

1. course Data:

Course code: Math206	Course title: Pure Mathematics and Applied Mathematics	Academic year/level:2008/2009 Second year - Second semester
Specialization: جميع التخصصات لمجموعة العلوم الكيميائية والفيزيائية	No. of instructional units: lecture <input type="text" value="5"/> tutorial <input type="text" value="3"/> pra <input type="text" value="--"/>	

2. course Aim

Demonstrate theoretical knowledge and have practical skills in the subject of pure and applied mathematics.
Demonstrate an ability to initiate and sustain in-depth research relevant to pure and applied mathematics.
Have an opportunity to put theory into practice via work-based learning.

3. Intended learning outcome

a) Knowledge and understanding	a1. Mention the theories and concepts used in pure and applied mathematics; a2. Identify the steps required to carry out a piece of research on a topic within pure and applied mathematics. a3. Recognize the contribution and impacts of real analysis in different areas of science
b) Intellectual skills	b1. Apply appropriate theories, principles and concepts relevant to the pure and applied mathematics.



	<p>b2. Assess and evaluate the literature within pure and applied mathematics.</p> <p>b3- Demonstrate an appropriate judgment in selecting and presenting information using various methods relevant to pure and applied mathematics.</p>
c) Professional skills	<p>c1. Plan and design practical activities using techniques and procedures appropriate to pure and applied mathematics.</p> <p>c2. Plan and design a piece of independent research using pure and applied mathematics media and techniques;</p>
d) General skills	<p>d1. Use appropriate effective written and oral communication learning relevant to the topics in the course of pure and applied mathematics.</p> <p>d2. Work effectively as part of a group, involving leadership, group dynamics and interpersonal skills such as listening, negotiation and persuasion relevant to these topics.</p> <p>d3. Deal with problems relevant to pure and applied mathematics topics using ideas and techniques some of which are at the forefront of the discipline.</p> <p>d4. Think independently and develop the ability to self appraise and reflect on scientific data Arabic and in English relevant to pure and applied mathematics</p>
4. course content	<p>1- Definitions, types of matrices, system of coordinates and moment of inertia of a rod, ring and a disc.</p> <p>2- Algebra of matrices, the plane and moment of</p>



	<p>inertia of a spherical shell, sphere, cone and cylinder.</p> <p>3- Inverse of matrix, the straight line and evaluation of a work done by a force using line integral .</p> <p>4- Solution of linear system of equation, the sphere and evaluation of a work done in conservative force field .</p> <p>5- Equivalent matrices, the coaxial system of spheres and evaluation of potential of a rod, ring and a disc at a point</p> <p>6- Solution of linear system, The cone and evaluation of potential of spherical shell and sphere at a point</p> <p>7- The eigenvalues of a matrix, The cylinder and motion of a particle under centrifugal forces.</p> <p>8- The eigenvectors of a matrix, The differential equation of central orbit</p> <p>9- Cayley Hamilton Theorem, Constrained motion of a particle on rough circular wire and rough sphere.</p> <p>10- Linear combination, Constrained motion of a particle on rough circular wire and rough cycloid</p> <p>11- Bilinear forms, Applications of Gauss theorem in a vector analysis,</p> <p>12- Quadratic Forms, Applications of Stake's theorem in a vector analysis.</p>
5. Teaching and learning methods	<p>5.1 Lectures.</p> <p>5.2 Tutorials</p> <p>5.3 Homework</p> <p>5.4 Oral discussion</p>
6. teaching and learning methods for students with	Non



special needs	
7. Student Assessment	
a. Procedures used:	Mid term Final exam
b. Schedule:	Assessment 1 Midterm Exam Week 7 Assessment 2 Final exam Week 15
c. Weighing of Assessment:	Test1 50 Marks Final exam 250 Marks
8. List of Textbooks and References:	
a. Course Notes	Course notes provided by the staff member of Math department, to be handed at the beginning of the semester.
b. Required Books (Textbooks)	1- James Stewart, Calculus, Amazon, 1999. 2-J. Littlewoodm, J. Hobborn, F.Norton, Mechanics 1,Cambridge University press, 1972.
c. Recommended Books	None
d. Periodicals, web sites,...,etc	None

Course Instructor: Dr. Ragab Omar Abd El-Rahman
Dr. El-Sayed I. Saad

Head of Department: Dr. Ragab Omar Abd El-Rahman

Date: / /