Course specification

University/Academy: Damanhour University

Faculty/Institute: Science

Department: Mathematics

1. course Data:

Course code:	Course title:	Academic year/level:
Math321	Abstract Algebra and ordinary Differential Equations	2009-2010 Third year - First term
Specialization: Mathematics and Physics	No. of instructional units: lecture 4 tutorial 2 practical -	

2. course Aim	Demonstrate theoretical knowledge in the field of Abstract Algebra, specially group theory, and ordinary differential equations and have practical skills and personal attributes and competencies that will be required for the field of abstract algebra or ordinary differential equations position in the international Mathematics. Demonstrate an ability to initiate and sustain in-depth research relevant to abstract algebra and ordinary differential equations equations. Training to put theory into practice via work-based learning.
3. Intended learning outcome	
a) Knowledge and understanding	a1. Describe familiarity with theories and concepts in abstract algebra, group theory and differential equations. a2. Summarize the structure and organization of the public and private sectors of the course of Abstract Algebra and group theory.

	a3. Identify the steps required to carry out a piece of research on a topic within Abstract Algebra, group theory and differential equations. a4. Mention the contribution and impacts of the mathematic social, economic, environmental, political and cultural terms.
b) Intellectual skills	b1. Apply appropriate theories, principles and concepts relevant to abstract algebra and ordinary differential equations. b2. Assess and evaluate the literature within abstract algebra and ordinary differential equations. b3. Analyze and interpret information from a variety of sources relevant to abstract algebra and ordinary differential equations. b4. Test appropriate judgment in selecting and presenting information using various methods relevant to abstract algebra and ordinary differential equations. b5. Manipulate a reasoned argument to the solution of familiar and unfamiliar problems relevant to abstract algebra, theory and differential equations.
c) Professional skills	c1. Plan practical activities using techniques and procedures appropriate to abstract algebra and ordinary differential equations. c2. Execute a piece of independent research using abstract algebra and ordinary differential equations media and techniques. c3. Criticize moral, ethical and safety issues

	which are pertinent to abstract algebra and ordinary differential equations.
d) General skills	d1. Communicate with other positively with problems relevant to problems in abstract algebra and ordinary differential equations. d2. Use organization skills (including task and time management) relevant to abstract algebra and ordinary differential equations both individually and in a group situation. d3. Solve problems relevant to abstract algebra and ordinary differential equations using ideas and techniques some of which are at the forefront of the disci
4. course content	Introduction to the concepts of basic algebraic structures
	Relations and Mappings
	Equivalence Relations-Equivalence Classes-Congruence Relations-Residue Classes.
	Multiplicative functions – Euler's function – Euler's theorem.
	Groups (Finite and Infinite-Cyclic-Isomorphic groups-subgroups)
	Differential Equations with Variable Coefficients.
	Series Solution.
	System of differential equations.
	Stability.
	Laplace Transforms.
	Systems of Total Differential Equations
	Total Differential Equations
5. Teaching and learning methods	5.1 Lectures. 5.2 Tutorials 5.3 Homework 5.4 Oral discussion

6. teaching and learning methods for students with special needs	None
7. Student Assessment	
a) Procedures used:	Final exam
b) Schedule:	Assessment 1 Final exam Week 15
c) Weighing of Assessment:	Final exam 200 Marks (100%)
List of Textbooks and References:	
d) Course Notes	Course notes provided by the staff member of Math department, to be handed at the beginning of the semester.
e) Required Books (Textbooks)	1 - Shepley L.Ross, "Introduction to ordinary differential equations", John Wiley and Sons, 1980. 2- John B. Fraleigh, "A first course in abstract algebra", Addison – Wesley publishing Company1970.
f) Recommended Books	None
g) Periodicals, web sites,…,etc	None

Course Instructor: Prof. Dr. Ragab Omar Abd El-Rahman

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

Date: / /