Course specification

University/Academy: Damanhour University

Faculty/Institute: Science

Department: Mathematics

1. course Data:

Course code: Math410	Course title: Fluid Dynamics	Academic year/level: 2010-2011 Fourth year - Second term
Specialization: Special Mathematics	No. of instructional units: lecture [3] tutorial [2] practical [-]	

2. course Aim	Demonstrate theoretical knowledge and have practical skills and personal attributes that will be required for Theory of Fluid Dynamics. Demonstrate an ability to initiate and sustain in-depth research relevant to Fluid Dynamics.
3. Intended learning outcome	
a) Knowledge and understanding	a1. Define the nature and operations of Fluid Dynamics. a2. Describe familiarity with theories and concepts used in the Fluid Dynamics. a3. Recognize the structure and organization of the public and private sectors of the concepts Fluid Dynamics. a4. Identify the steps required to carry out a piece of research on a topic within Fluid Dynamics.
b) Intellectual skills	b1. Apply appropriate theories, principles and concepts relevant to the Fluid Dynamics. b2. Critically assess and evaluate the literature with Fluid Dynamics. b3. Analyze and interpret information from a variety of sources relevant to Fluid Dynamics.

	b4. Demonstrate a reasoned argument to the solution of familiar and unfamiliar problems relevant to mathematical equations in the Fluid Dynamics
c) Professional skills	c1. Plan practical activities using techniques and procedures appropriate to mathematic related to Fluid Dynamics c2. Execute and communicate a piece of independent research using mathematics media and techniques Fluid Dynamics. c3. Respond to change within the external and internal mathematics to Fluid Dynamics. c4. Solve problems relevant to Fluid Dynamics.
d) General skills	d1. Deal with an appropriate effective data relevant to Fluid Dynamics. d2. Demonstrate the ability to work effectively as part of a group, involving leadership, group dynamics and interpersonal skills such as listening, negotiation and persuasion relevant to mathematics and theoretical physics. d3. Use organization skills (including task and time management) relevant to Fluid Dynamics both individually and in a group situation. d4. Solve problems relevant to Fluid Dynamics using ideas and techniques some of which are at the forefront of the discipline. d5. Acquire the ability to self appraise and reflect on practice relevant to Fluid Dynamics.
4. course content	1-Two – dimensional motion
	2- Stream function .
	3- Velocity Potential , Complex Potential, Complex Velocity
	4- Blasius theorem
	5- Uniform stream, Source, Sink and Vortex
	6- Uniform stream past a Circular cylinder with circulation
	7- Doublets
	8- Images
	9- Conformal transformation, the Joukowski transformation

	10- Uniform flow with circulation past an elliptic cylinder.
	11- Rectilinear vortices
	12- Theory of waves
	13- Simple harmonic Progressive waves, Capillary Waves, Stationary Waves.
	14- Sound waves
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	Non
7. Student Assessment	
a. Procedures used:	Final exam
b. Schedule:	Assessment 1 Final exam Week 15
c. Weighing of Assessment:	Final exam 150 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)	L.M.Milne- Thomson Theoretical Hydrodynamics London , Macmillan & Coltd New York 1960
1- Recommended Books	Title: Advanced Computer Programming Author: F. J. Corbato, J. W. Poduska and J. H. Saltzer The MIT PRESS 1963
2- Periodicals, web sites,…,etc	None

Course Instructor: Dr. Ragab Omar Abd El-Rahman

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

Date: / /