Course specifications

Program(s) on which the course is given: **Post-graduate in Applied Mathematics.**
Major or minor element of program: **Major**
Department offering the program **Mathematics,**.
Department offering the course: **Mathematics**
Academic year / Level: Pre-Master in Applied Mathematics
Date of specification approval: September 2008

A- Basic Information

Title: Mechanics of continuum medium Code: M6421

Credit Hours: 2 Lecture: 2
Tutorial: 0 Practical:0 Total: 2

B- Professional Information

1 – Overall aims of course

The aims of this course are the student learn what the continuum medium and its applications in the two approach (the theory of elasticity and the fluid dynamics) and how the student has the ability to formulism and solve some important physical problem related to the above subjects

. 2 – Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

a1- Display the application laws of equilibrium
a2- Display of some basis low of stress and strain
a3- Presenting what the equation of continuity and equation of motion in fluid
. **a4**- Apply to solve problems on these topics.

b- Intellectual skills

b1- **Interpret ideas depend on mathematical methods.**

b2- **Plan How the student transfer the physical problems to the mathematical problem.**

b3- **Evaluate some abilities to solve some problems in our life.**

c- Professional and practical skills

c1- **Apply the outcomes of the course through its use in practical application in different scientific fields.**

d- General and transferable skills

d1-**Adapt the solution of equations of motion related to the topics covered in the course**

d2-**Apply an extend and modification of the methods of the course for more complicated problems in Applied mathematics..**

3- Contents

Topics	No. of hours	Lecture
1- Some definition of the contents 2 - The stress on the body and its properties 3- Normal and shear stress	4 4 4	2 2 2
1-The strain of the body 2- The properties of the deformation 3-Hock's low 4-The relation between stress and strain	4 4 4 4	2 2 2 2
1- Some definition of fluid 2- The continuity equation in some coordinates 3- the equation of motion Equilibrium of fluid 4- Navier-Stocks Equation 5- some application of the solution of Navier-Stock Equation	4 4 4 4 4	2 2 2 2 2

4– Teaching and learning methods

4.1-Lectures
4.2-Atteding tutorial classes.

5- Student assessment methods

5.1-Mid term written exam to assess understanding competencies.
5.2- Oral exam to assess attendance and interesting.
5.3- Final term written exam to assess comprehension

Assessment schedule

Assessment 1	Mid term.	Week	6-8
Assessment 2	Final term	Week	13
Assessment 3	Final term written exam	Week	14

Weighting of assessments

Mid-Term Examination	20	%
Final-term Examination	60	%
Oral Examination.	10	%
Semester Work	10	%
Other types of assessment	%	
Total	100	%

Any formative only assessments

6- List of references

- K F Riley, M P Hobson & Bence, Mathematical Methods for Physics and Engineering, CUP, 1998.
- E Kreyszig, Advanced Engineering Mathematics, 7th Ed., J Wily, 1993.
- M R Spiegel, Laplace Transforms, Schaum, 1992.
- D Trim, Introduction to complex analysis and applications, PWS, 1995.

7- Facilities required for teaching and learning

PC's – package for ready made scientific programs.

Course coordinator: Dr Gamil shalaby

Head of Department: Prof. Dr.. Mohamed A. Ramadan

Date: / /