

## **Continuum Mechanics, SG2122**

### **Preliminary program, fall 2008**

#### **Course material**

We will follow Lars Söderholm, Basic Continuum Mechanics. You find it as a pdf-file on the home page of the course. Some material will be added to this file during the course.

An alternative text is

W. M. Lai, D. Rubin and E. Krempl, **Introduction to Continuum Mechanics** 3<sup>rd</sup> Ed., Butterworth-Heinemann 1993.

It can be found as an electronic book accessible for KTH students from the catalogue of KTHB. You will find a link to the book there.

We will cover Chapters

Introduction 1,

Tensors 2A-C,

Kinematics of a Continuum 3.1-16

Stress 4.1-7, 4.9, 4.12-15

The Elastic Solid 5.1-5, 5.7-9, 5.11-16, 5.22

Newtonian Viscous Fluid 6. 1-7, 6.9-12, 6.16, 6.27

Integral Formulation of General Principles 7. 6, 7.9

Non-Newtonian Fluids 8.1

Some aspects of Nonlinear Elasticity will also be briefly discussed

There will be 6 home assignments, one handed out each of the first 6 weeks, and they are to be handed in the first lecture of the coming week.

**Week 36** Home assignment 1 handed out

1 Introduction and tensors

2 Tensors

3 Tensors

**Week 37**

4 Tensors

5 Kinematics

6 Kinematics

**Week 38**

7 Kinematics

8 Kinematics

9 Stress

**Week 39**

- 10 Stress
- 11 Elastic solid
- 12 Elastic solid

**Week 40**

- 13 Elastic solid
- 14 Elastic solid
- 15 Elastic solid

**Week 41**

- 16 Elastic solid
- 17 Newtonian fluids
- 18 Newtonian fluids

**Week 42**

- 19 Newtonian fluids
- 20 Non-Newtonian fluids
- 21 Once over again

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