The Department of Structural Engineering and Building Technology at Aalto University School of Science and Technology is organising an intensive postgraduate course on contact mechanics. The course is a part of the program of the National Graduate School in Engineering Mechanics.

The course will be lectured by professor Anders Klarbring from Linköping University. The lectures will be given in the Department of Structural Engineering and Building Technology, address: Rakentajanaukio 4A, Espoo.

All the inquiries can be directed to Reijo Kouhia tel: +358 (0)9 47023755, or email: Reijo.Kouhia@tkk.fi. Registrations for the course will be taken care by the secretary Elsa Nissinen-Narbro tel: +358 (0)9 47023701, or fax: +358 (0)9 47023826, or email: Elsa.Nissinen@tkk.fi.

If accommodation services are needed, please, ask for the information from the secretary.

Course program
Lectures 9.15-12.00 from Monday to Wednesday in the lecture hall R1, Thursday in R9 (third floor) and Friday in R3 (second floor).

Content
1. Modelling large displacement contact and friction problems, linearization
2. Discrete contact problems
   a. Dynamic
   b. Quasi-static
   c. Incremental
   d. Steady sliding
3. Stability, uniqueness and existence properties based on mathematical programming
4. Numerical methods
5. Miscellaneous
   a. Structural optimization and contact problems
   b. Thermoelastic instability
   c. Shakedown

Contact mechanics
15th – 19th March, 2010

A course given by
Anders Klarbring
Division of Mechanics
Linköping University
Background
Contact mechanics has its application in many engineering problems. No one can walk or drive a car without frictional contact. However, contact mechanics is not usually included in engineering curriculum. This is most probably due to the inherent non-linearity and non-smoothness of contact problems, which complicates the solution.

The aim of the course is to provide a modern introduction to contact mechanics, principles, modeling and solution techniques. The presentation follows the paradigm of non-smooth mechanics, meaning that contact and friction phenomena are treated by means of multi-valued and non-smooth relations. Mathematical programming and optimization theory are important mathematical tools.

Study material


The study material will be e-mailed to the participants.

Participants
The participants are assumed to have a background in continuum and structural mechanics. Some background in the finite element method and optimization theory is also desirable, although not mandatory.

Requirements and credits (ECTS)
Attending lectures and successful completion of home exercises will give 5 credit points.

Further information
The lectures will be given in the Department of Structural Engineering and Building Technology, Rakentajanaukio 4A, Espoo. (Number 4 in the map below).
Up to date information available at: http://buildtech.tkk.fi/fi/ajankohtaista/uutiset/

Arriving to Otaniemi
Buses from the centre of Helsinki
102, 102T,103 (Line T via Lauttasaari)
194,195 via Munkkiniemi

From the centre of Tapiola
2,4,4T,10,15,52,194,195,505,510,512,550

Bus 103 stops at the library (24) on Otaniemientie and both 194 and 195 stops opposite the library on Vuorimiehentie. Bus 102 stops on Otaniemientie and Otakaari.

Aikataulut/Timetables http://www.ytv.fi/