



FHK3009 Dynamic Finite Element Analysis 10.0 credits

Dynamisk finitelementanalys

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FHK3009 valid from Autumn 2016

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Accepted to education at research level at KTH, KI or alternatively, as a doctoral student at another university with similar course requirements.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

To introduce theoretical background for dynamic Finite Element Analysis, FEA.

Course contents

The course content and written exam is decided from the needs of the present graduate students.

Theory and practical use of dynamic FAE is studied. A comprehensive introduction to the methods and theory of nonlinear FEA is provided. The course is suited for users, which have limited experience and want an introduction to the theoretical background for dynamic FEA.

- Continuum mechanics
- Lagrangian and Eulerian finite element formulations
- Implicit and explicit finite element methods
- Constitutive models
- Solution methods and stability
- Arbitrary Lagrangian Eulerian formulations
- Element technology
- Contact algorithms

Disposition

Half speed, self-study and ongoing discussions with the teacher.

Course literature

Kleiven, S; Halldin, P; Zenkert, D, Dynamic Finite Element Methods, Lecture Notes for 4E1150, Stockholm Sweden 2001, Skrift 2001-15, Department of Aeronautics, KTHBe-lytschko, T; Liu, W K; Moran,

B, Nonlinear Finite Elements for Continua and Structures, West Sussex England 2000, John Wiley & Sons Ltd

Bathe, K-J, Finite Element Procedures, Upper Saddle River USA 1996, Prentice-Hall Inc

Examination

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Seminars, individual activity and modeling tasks.

Other requirements for final grade

Attended seminars and approved tasks.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.