MF2068 Machine Dynamics 6.0 credits

Maskindynamik

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

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

Establishment

Course syllabus for MF2068 valid from Autumn 2015

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

A Bachelor's degree in mechanical engineering or the equivalent, or registered CMAST3/CDEPR3/CFATE3.

Language of instruction

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

Intended learning outcomes

On completion of the course, the student should be able to:

• model the dynamic behaviour of machine components and systems using Matlab and Ansys;

• analyse the frequencies contained in a measured dynamic response;

• identify dynamic system properties from data in vibration measurements;

• carry out inverse modelling of a dynamic machine system.

Course contents

The course presents the theories of machine dynamics, how to model and simulate dynamic behaviour of machine systems in both time and frequency domains and how to transform the responses between these domains. In the course, technology and methods for load and vibration measurements are also introduced, and exercises on performing such measurements and analysing the measurement results are carried out. Furthermore, parameter identification and inverse modelling are discussed and practised.

Disposition

• Lessons (10 x 2 hours): Lessons deal with dynamic systems, simulations in the time domain, simulations in the frequency domain, technology to measure dynamic loads and vibrations, transformations between time and frequency domains, identification of damping and friction losses, and the inverse modelling of dynamic systems.

• Physical laboratory sessions (4 x 2 hours): Laboratory sessions in measurement.

• Computer exercises (4 x 2 hours): Modelling and simulation exercises in computer lab.

• Group assignments (scheduled supervision).

• Homework assignments (not scheduled time).

Course literature

1 - E-book via KTHB (KTH library)

2 - Material distributed during the course

Examination

- TEN1 - Written Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercise, 3.0 credits, grading scale: P, F

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.

ÖVN1 - Passed laboratory sessions and written assignments, 3 credits, grading scale P/F

TEN1 - Written examination, 3 credits, grading scale A-F

The final grade is based on the grading of TEN1

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.