



COURSE SYLLABUS

Simulation of Rigid Body System, 7.5 credits

Simulering av stelkroppssystem, 7,5 högskolepoäng

Course Code:	TSSC18	Education Cycle:	First-cycle level
Confirmed by:	Dean Dec 18, 2009	Disciplinary domain:	Technology (95%) and social sciences (5%)
Valid From:	Aug 1, 2010	Subject group:	MT1
Version:	1	Specialised in:	G2F
		Main field of study:	Product Development

Intended Learning Outcomes (ILO)

On completion of the course, the student should

- have a good understanding of the basics of rigid body dynamics
- have some understanding how governing equations are treated numerically
- be able to use a commercial system for analyzing a system of rigid bodies

Contents

The objective of the course is to provide knowledge in rigid body dynamics and the numerical treatment of rigid body systems.

The course includes the following topics:

- Dynamics of particles - repetition
- Planar kinematics of rigid bodies, Coriolis' rule of derivation, relative motion of two points, kinematic constraints, instant center of velocities
- Planar kinetics of rigid bodies, equations of motion, linear and angular momentum, mass moment of inertia
- Power, balance in energy, kinetic energy, linear and angular momentum, impact
- Rigid body dynamics in three-dimension, inertia tensor, parallel-plane motion, gyroscopic motion
- Numerical treatment of rigid body systems by using a commercial system.

Type of instruction

Lectures, exercises and computer exercises.

The teaching is conducted in English.

Prerequisites

Completed courses on bachelor level corresponding to at least 60 credits within the major subject Mechanical Engineering, including at least 7,5 credits in Mechanics and 15 credits in Mathematics (or the equivalent).

Examination and grades

The course is graded Fail (U), 3, 4 or 5.

Registration of examination:

Name of the Test	Value	Grading
Examination ¹	4.5 credits	U/3/4/5
Project work	3 credits	U/G

¹ Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Title:ENGINEERING MECHANICS - DYNAMICS, SI-VERSION, 6:e utgåva

Author: Meriam, Kraige

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