COURSE SYLLABUS

Mechanics 2, 6 credits

Mekanik 2, 6 högskolepoäng

Course Code:	T2MK17	Education Cycle:	First-cycle level
Confirmed by:	Dean May 26, 2015	Disciplinary domain:	Technology (95%) and social sciences (5%)
Valid From:	Jan 1, 2017	Subject group:	MT1
Version:	1	Specialised in:	G1F
Reg number:	JTH 2015/1950-313	Main field of study:	Mechanical Engineering

Intended Learning Outcomes (ILO)

On completion of the course, the student should

Knowledge and understanding

-Have a detailed knowledge of fundamental rigid body dynamics

-Show understanding of the fundamental concepts of rigid body dynamics

Skills and abilities

-Be able to make free body diagrams of systems of rigid bodies

-Be able to develop and solve equations describing motions of rigid bodies

-Be able to discuss problems and solutions written and orally.

-Be able to model, simulate, predict and evaluate motion of rigid body systems

Judgement and approach

-Show ability to select appropriate solution strategies

-Show ability to evaluate the plausibility of calculated solutions

Contents

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

-Dynamics of particles - repetition
-Systems of particles: Momentum, angular momentum, work, energy
-Rigid body dynamics in 2D: fixed axis rotation, general plane motion, mass moment of inertia, work, energy, impulse, impact
-Rigid body dynamics in 3D: fixed point rotation, kinetic energy, mass moment of inertia tensor, Euler equations, rotation of axis-symmetrical bodies, general three dimensional motion, imbalance, gyroscopic motion

Type of instruction

Lectures, exercises, project work.

The teaching is conducted in English.

Prerequisites

General entry requirements and completed courses Multivariable Calculus, 6 credits and Mechanics 1, 6 credits (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

Registration of examination:

Name of the Test	Value	Grading
Examination[1]	4 credits	5/4/3/U
Assignments	2 credits	U/G

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

Course literature

Literature

Engineering Dynamics SI version 7th edition
J. L. Meriam, L. G. Kraige
John Wiley & Sons, ISBN 978-1-118-08345-1