Faculty of Health, Science and Technology
Mechanical Engineering

Syllabus

Mechanics 2: dynamics

Course Code:	MSGB43
Course Title:	Mechanics 2: dynamics *Mekanik 2: dynamik*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
MTA (Mechanical Engineering)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2018-09-13, and is valid from the Spring semester 2019 at Karlstad University.

Prerequisites
Mathematics for engineers 15 ECTS credits and Mechanics 1: Statics 7.5 ECTS credits, or admission to
the study program in Mechanical Engineering or in Innovation and Design Engineering, or equivalent.

Learning Outcomes
Upon the completion of this course, students should be able to:
- give an account of Newton's laws,
- analyse particle motion and make calculations of acceleration, velocity, and distance,
- identify loading and the corresponding motion of a particle,
- give an account of and calculate work and energy in a particle motion,
- give an account of and calculate linear and angular impulse and momentum in a particle motion,
- analyse the motion of a system of particles,
- characterize the motion of a rigid body including planar and spatial motion,
- identify loading and analyse the motion of a rigid body undergoing planar and spatial motion,
- give an account of and calculate work, energy, impulse and momentum of a rigid body in motion.

Content
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- Dynamics of particles (Kinematics and Kinetics)
- Kinetics of system of particles
- Area and mass moment of inertia
- Two-dimensional dynamics of rigid bodies (Kinematics and Kinetics)
- Three-dimensional dynamics of rigid bodies (Kinematics and Kinetics)

Reading List
See separate document.

Examination
Assessment is based on hand-in assignments and a written exam.

Grades
One of the grades U (Fail), 3 (Pass), 4 (Pass with some distinction) or 5 (Pass with distinction) is awarded
in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.