UNIVERSITY OF GOTHENBURG

DEPARTMENT OF PHYSICS

FYP102 Mechanics A, 7.5 credits

Mekanik A, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2011-06-08 and was last revised on 2021-03-01 to be valid from 2021-08-30, autumn semester of 2021.

Field of education: Science 100%
Department: Department of Physics

Position in the educational system

The course is also given as a standalone course.

The course can be part of the following programmes: 1) Marine Science, Bachelor's Programme (N1MAV), 2) Bachelor of Science in Physics (N1FYS), 3) Medical Physicist Programme (N1SJU) and 4) Bachelor of Science Programme in Chemistry (N1KEM)

Main field of studies	*Specialization*
Physics	G1N, First cycle, has only upper-secondary level entry requirements

Entry requirements

General entrance requirements for university studies and the Swedish upper secondary courses Physics B, Chemistry A, Mathematics E or Physics 2, Chemistry 1, Mathematics 4 or equivalent.

Learning outcomes

Knowledge and understanding
On completion of the course, the student is expected to:

- have an understanding that experiments play a central role and that scientific knowledge is built upon an interplay between observations, models and theories
- be able to describe explain and predict physical phenomena in nature, everyday life and society

Competence and skills

On completion of the course, the student is expected to be able to:

- orally and in writing present simple physical problems.
- make calculations on simple physical systems
- set up hypotheses and models, and carry out experiments to verify or revise a hypothesis or a model
- use the scientific methods and models of the physics corresponding to the course contents
- plan and carry out experiments as well as be able to use computers to collect measurement data and to analyse it.

Judgement and approach

After having completed the course the student should have developed an ability to analyse and assess societal issues from a scientific perspective

Course content

In this course the laws of kinematics are treated within classical mechanics. In connection with the course, also experiments and demonstrations are done.

Sub-courses

1. **Mechanics** *(Mekanik),* 6.5 credits
   Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)
   - interaction, force
   - conservation laws: linear momentum, energy and angular momentum
   - space, time, mass, position, velocity, acceleration
   - Newton's laws, the law of gravity, the movements of celestial bodies in the universe, inertial forces in accelerating systems
   - static systems
   - rotational motion of rigid bodies

2. **Experimental problemsolving** *(Experimentell problemlösning),* 0.5 credits
   Grading scale: Pass (G) and Fail (U)
   In this part problemsolving based laboratory sessions are performed where the

result is compiled in a report.

3. **Demonstrations** *(Demonstrationer),* 0.5 credits
   Grading scale: Pass (G) and Fail (U)
   The student will specialize around the physics in a specific experiment that shall be presented orally.

Form of teaching

Used forms of teaching:

Compulsory components with requirements of attendance: laboratory session (module 2) as well as demonstrations and presentations (module 3).

Language of instruction: Swedish

Assessment

Examination formats:

Part 1: written exam and hand-in problems, 6.5 credits

Part 2: Project report, 0.5 credits

Part 3: oral presentation, 0.5 credits

A student has the right to request a change of examiner if failed twice on the same exam, if this is practically possible. The application shall be sent to the board of the department and has to be in writing.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
For grade Pass (G) on the whole course, at least Pass (G) on all parts is required.

For grade Pass with distinction (VG) on the entire course, Pass with distinction (VG) is required on part 1 as well as Pass (G) on parts 2 and 3 respectively.

Course evaluation

At the end of the course an anonymous course evaluation is provided. The result is published on the course homepage in University of Gothenburg's learning management system.