



# SG2804 Biomechanics of Human Movement 7.0 credits

## Människans rörelsemekanik

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 SG2804 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

Mechanics I and II, or corresponding courses.

## Language of instruction

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

## Intended learning outcomes

After the course, the student should be able to:

- Apply principles of classical mechanics to the study of human motion
- Describe motion with precise, well-defined mechanical and anatomical terminology
- Describe the internal and external forces acting on the body during typical human activities
- Understand how muscle actions control movements
- Model muscle activation and movement
- Understand the methods and limitations of different experimental and analytical techniques used

## Course contents

The course focuses first on the anatomy and physiology of the human muscle-force system, then on biomechanical applications involved in human movement. Fundamental topics of muscle physiology, anatomy, and treatment, and muscle modeling will be covered first. From this foundation, the course will focus on methods to analyze biomechanical problems, including kinematics and kinetics of movement and the muscle force system. Finally, relevant topics requiring such analyses will be discussed, with some emphasis on walking. Emphasis is placed on analysis, interpretation and critical evaluation of results.

## Disposition

Lectures, discussions, data collection at a motion analysis laboratory, computer labs, project presentations and reports.

## Course literature

Biomechanical Basis of Human Movement av Joseph Hamill

- **ISBN10:**1451194048
- **ISBN13:**9781451194043

## Examination

- PRO1 - Project, 7.0 credits, grading scale: A, B, C, D, E, FX, 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.

The course grade is based on 5 at-home group assignments and 1 at-home group final project. Some of these are presented orally and some in written form.

## **Other requirements for final grade**

All projects must be completed satisfactorily.

## **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.