



## COURSE SYLLABUS

# Mechanics related to Prosthetics and Orthotics, 7.5 credits

*Mechanics related to Prosthetics and Orthotics, 7,5 högskolepoäng*

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<b>Course Code:</b> HMPG18	<b>Education Cycle:</b> First-cycle level
<b>Confirmed by:</b> Utbildningsrådet Nov 28, 2017	<b>Disciplinary domain:</b> Technology
<b>Revised by:</b> Department head Apr 29, 2019	<b>Subject group:</b> MT2
<b>Valid From:</b> Dec 9, 2019	<b>Specialised in:</b> G1N
<b>Version:</b> 2	<b>Main field of study:</b> Prosthetics and Orthotics
<b>Reg number:</b> Department of Rehabilitation	

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### Intended Learning Outcomes (ILO)

Upon completion of the course the student should have the ability to:

Knowledge and understanding

- explain elementary functions and their properties
- explain vectors and the basic calculations which are required to define them
- show familiarity with the concepts eigenvalues and eigenvectors
- explain the basics of statics and dynamics
- explain central concepts within mechanics use as force, energy and momentum.

Skills and abilities

- solve equations and algebra expressions containing elementary functions
- use vectors and vector calculations to solve geometrical problems in two and three dimensions
- show knowledge of free body diagrams and express mechanical equilibrium for a system
- use equations to solve rigid-body calculations
- account for and discuss mechanical problems and solutions.

Judgement and approach

- show ability to choose appropriate strategies for solutions
- show ability to see if a solution is within reason.

### Contents

Mathematics:

- derivatives
- integrals
- differential equations
- trigonometric functions
- vectors

Mechanics:

- classical mechanics, force, static equilibrium, free body diagram

- center of mass
- kinematics, speed, acceleration, movement in cartesian coordinates
- Kinetics, Newton's laws of motion
- power, work, energy

### **Type of instruction**

The course is implemented through lectures, group work and seminars.

The teaching is conducted in English.

### **Prerequisites**

General entry requirements.

### **Examination and grades**

The course is graded A, B, C, D, E, FX or F.

Examination of the course will be based upon one written examination.

A university lecturer serves as examiner for the course.

Registration of examination:

Name of the Test	Value	Grading
Written examination	7.5 credits	A/B/C/D/E/FX/F

### **Other information**

During the course attendance is compulsory during group work and seminars.

### **Course literature**

Nelson, E., Best, C., McLean, W., & Potter, M. (2010). *Schaum's Outline of Engineering Mechanics - Statics*. New York: McGraw-Hill.

Nelson, E., Best, C., McLean, W., & Potter, M. (2010). *Schaum's Outline of Engineering Mechanics - Dynamics*. New York: McGraw-Hill.