



## KURSPLAN

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

*Mechanics related to Prosthetics and Orthotics, 7.5 credits*

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<b>Kurskod:</b>	HMPG18	<b>Utbildningsnivå:</b>	Grundnivå
<b>Fastställt av:</b>	Utbildningsrådet 2017-11-28	<b>Utbildningsområde:</b>	Tekniska området
<b>Reviderad av:</b>	Avdelningschef 2019-04-29	<b>Ämnesgrupp:</b>	MT2
<b>Gäller fr.o.m.:</b>	2019-12-09	<b>Fördjupning:</b>	G1N
<b>Version:</b>	2	<b>Huvudområde:</b>	Ortopedteknik
<b>Diarienummer:</b>	Department of Rehabilitation		

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### Lärandemål

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

#### Kunskap och förståelse

- 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.

#### Färdighet och förmåga

- 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.

#### Värderingsförmåga och förhållningssätt

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

### Innehåll

#### 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

### Undervisningsformer

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

Undervisningen bedrivs på engelska.

### Förkunskapskrav

General entry requirements.

### Examination och betyg

Kursen bedöms med betygen A, B, C, D, E, FX eller F.

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

A university lecturer serves as examiner for the course.

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Written examination	7,5 hp	A/B/C/D/E/FX/F

### Övrigt

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

### Kurslitteratur

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.