



## KURSPLAN

# Prosthetic Management and Biomechanics of the Lower Limb I, 15 högskolepoäng

*Prosthetic Management and Biomechanics of the Lower Limb I, 15 credits*

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Kurskod:	HPMK19	Utbildningsnivå:	Grundnivå
Fastställd av:	Utbildningsrådet 2017-11-28	Utbildningsområde:	Medicinska området
Reviderad av:	Utbildningsrådet 2024-02-13	Ämnesgrupp:	MT2
Gäller fr.o.m.:	Våren 2025	Fördjupning:	G1F
Version:	3	Huvudområde:	Ortopedteknik

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### Lärandemål

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

#### Kunskap och förståelse

- explain normal and pathological movement in the human body from a biomechanical perspective
- explain how internal and external forces affect the human body
- explain different amputation techniques
- show familiarity with evidence and research within the area of transtibial prosthetics
- explain different treatment options
- explain common manufacturing methods in prosthetics.

#### Färdighet och förmåga

- show familiarity with the basic surface anatomy and musculoskeletal functions of the lower limb
- use biomechanical methods in analysing and evaluating lower limb prosthetic interventions
- use free body diagrams
- use anthropometric data for biomechanical calculations
- perform biomechanical calculations
- perform patient assessment
- select and provide appropriate intervention with regards to the user
- document performed actions and results according to existing legislation
- show familiarity with frequently used materials and equipment necessary in the production of prosthetic devices
- manufacture prosthetic devices according to regulations of occupational safety and health
- use appropriate outcome measures to evaluate prosthetic interventions
- show ability to communicate professionally with patients and colleagues.

#### Värderingsförmåga och förhållningssätt

- demonstrate empathy towards users and colleagues
- demonstrate an understanding for other health professions and their role in prosthetic

interventions

- critically evaluate one's own performance.

## Innehåll

Part 1, Biomechanics 7.5 credits

- basic surface anatomy
- functions of the musculoskeletal system
- normal gait biomechanics
- pathological gait biomechanics
- prosthetic biomechanics
- biomechanical calculations

Part 2, Transtibial Prosthetics 7.5 credits

- prostheses for trans-tibial amputations
- the rehabilitation process for patients, from needs analysis to finished product
- initial gait and mobility training with prosthetics
- current research and evidence within the subject area
- relevant laws and regulations when working with patients
- occupational health and safety
- work hygiene
- stump socket interface forces

## Undervisningsformer

The course is implemented through lectures, group work, seminars and laboratory sessions including patient meetings.

Undervisningen bedrivs på engelska.

## Förkunskapskrav

General entry requirements and completion of the courses Anatomy and physiology, Basic Course, 7.5 credits, Mechanics related to Prosthetics and Orthotics, 7.5 credits and Applied Materials Technology, 7.5 credits.

## Examination och betyg

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

Part 1 is examined through one individual written exam and one group seminar.

Part 2 is examined through one individual written report and practical sessions with patient interaction.

A university lecturer serves as examiner for the course.

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Individual written examination	6,5 hp	A/B/C/D/E/FX/F

Seminar	1 hp	U/G
Individual written assignment	6,5 hp	A/B/C/D/E/FX/F
Patient interaction	1 hp	U/G

## Övrigt

### Temporary interruption of a course

The School of Health and Welfare may suspend a student's participation in clinical training or other practical activities during the course if a student demonstrates gross unfitness/incompetence when applying skills. A student whose work-based training or other practical activities have been canceled due to gross inadequacy/incompetence may not continue study before the course director or examiner has verified and approved that the student has the knowledge and skills required. In connection with a decision on suspension, the decision will specify the grounds on which the suspension is based. After the decision, an individual plan will be established for the student where knowledge and skills gaps are specified, the degree of support the student is entitled to, and the terms and date(s) for examination(s).

### Kurslitteratur

Behnke, R. S., & Plant, J. (2022). *Kinetic anatomy* (Fourth edition). Human Kinetics, Inc.

Chui, K. K., Jorge, M., Yen, S.-C., & Lusardi, M. M. (2020). *Orthotics and prosthetics in rehabilitation* (Fourth edition). Elsevier.

Krajbich, J. I., Pinzur, M. S., Potter, B. K., & Stevens, P. M. (2023). *Atlas of amputations and limb deficiencies: surgical, prosthetic, and rehabilitation principles* (Fifth edition). AAOS.

McRae, R. (2010). *Clinical orthopaedic examination* (Sixth edition.). Churchill Livingstone.

The most recent editions of the course literature should be used.

Additional relevant journal articles will be used.