



## KURSPLAN

# Orthotic Management and Biomechanics I, 15 högskolepoäng

## *Orthotic Management and Biomechanics I, 15 credits*

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<b>Kurskod:</b>	H01N13	<b>Utbildningsnivå:</b>	Grundnivå
<b>Fastställd av:</b>	Utbildningsrådet 2023-04-11	<b>Utbildningsområde:</b>	Tekniska området
<b>Reviderad av:</b>	Utbildningsrådet 2024-04-09	<b>Ämnesgrupp:</b>	MT2
<b>Gäller fr.o.m.:</b>	2024-08-19	<b>Fördjupning:</b>	G2F
<b>Version:</b>	3	<b>Huvudområde:</b>	Ortopedteknik

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### Lärandemål

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

#### Kunskap och förståelse

- show familiarity with evidence and research within the area of ankle foot orthotics
- show familiarity with evidence and research within the area of knee orthotics
- explain different ankle foot orthotic treatment options
- explain different knee orthotic treatment options
- explain common manufacturing methods in orthotics
- explain biomechanical principles related to ankle foot orthotics
- explain biomechanical principles related to knee orthotics
- explain three-dimensional gait analysis systems and their use within the subject area.

#### Färdighet och förmåga

- palpate and name the diverse anatomical structures of the musculoskeletal systems and account for their function
- use biomechanical methods in analysing and evaluating lower limb orthotic interventions
- describe and evaluate orthotic devices from a biomechanical perspective
- collect and interpret instrumented gait analysis data
- perform biomechanical calculations
- select and provide appropriate orthotic intervention with regards to the user
- discuss interventions and results according to existing legislation, quality registries and guidelines
- handle and manage frequently used materials and equipment necessary in the production of orthotic devices according to regulations of occupational safety, health and environmental sustainability
- critically evaluate and act upon the relevance of current research and proven experience
- use appropriate outcome measures to evaluate orthotic interventions.

#### Värderingsförmåga och förhållningssätt

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

interventions

- critically evaluate one's own performance- during practical sessions.

### Innehåll

- ankle foot orthotics (AFO), concepts and prescription of orthotic interventions
- knee orthotics (KO), concepts and prescription of orthotic interventions
- current research and evidence within the subject area
- musculoskeletal and biomechanical aspects/effects when using AFO and/or KO
- instrumented gait analysis
- dynamic biomechanical calculations

### Undervisningsformer

The course is conducted through lectures, workshops, group work, seminars and laboratory sessions including client interactions.

Undervisningen bedrivs på engelska.

### Förkunskapskrav

General entry requirements and passed courses in semester 1 and taken courses in semester 2 in the Prosthetics and Orthotics Bachelor Program, or equivalent.

### Examination och betyg

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

The examination will be based upon individual written examinations, oral examination, seminar and practical examinations.

Practical Examination elements include workshops and laboratory sessions which and will only be provided once per group of students during the course, due to the complexity and one-off nature, and required sequence of this content.

A university lecturer serves as examiner for the course.

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Individual written examination 1	5 hp	A/B/C/D/E/FX/F
Individual written examination 2	3 hp	A/B/C/D/E/FX/F
Oral examination	1 hp	U/G
Seminar	3 hp	U/G
Practical examinations	3 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. (2012). *Kinetic anatomy* (3. ed.). Human Kinetics.

Chui, Jorge, M., Yen, S.-C., & Lusardi, M. M. (2020). *Orthotics and prosthetics in rehabilitation* (4th. ed.). Elsevier.

McRae, R. (2010). *Clinical orthopaedic examination* (6th. ed.). Churchill Livingstone/Elsevier.

Richards, J. (2008). *Biomechanics in clinic and research: an interactive teaching and learning course*. Churchill Livingstone/Elsevier.

Literature within gait analysis, one of the following:

Perry, J., & Burnfield, J. M. (2010). *Gait analysis: normal and pathological function* (2nd. ed.). SLACK.

Richards, J., Levine, D., & Whittle, M. W. (2022). *Whittle's gait analysis*. (6th. ed.). Churchill Livingstone/Elsevier.

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

Additional relevant journal articles will be used.