



COURSE SYLLABUS

Orthotic Management and Biomechanics I, 15 credits

Orthotic Management and Biomechanics I, 15 högskolepoäng

Course Code: H01N13	Education Cycle: First-cycle level
Confirmed by: Utbildningsrådet Apr 11, 2023	Disciplinary domain: Technology
Revised by: Utbildningsrådet Apr 9, 2024	Subject group: MT2
Valid From: Aug 19, 2024	Specialised in: G2F
Version: 3	Main field of study: Prosthetics and Orthotics

Intended Learning Outcomes (ILO)

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

Knowledge and understanding

- 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.

Skills and abilities

- 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.

Judgement and approach

- 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.

Contents

- 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

Type of instruction

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

The teaching is conducted in English.

Prerequisites

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 and grades

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

Registration of examination:

Name of the Test	Value	Grading
Individual written examination 1	5 credits	A/B/C/D/E/FX/F
Individual written examination 2	3 credits	A/B/C/D/E/FX/F
Oral examination	1 credit	U/G
Seminar	3 credits	U/G
Practical examinations	3 credits	U/G

Other information

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).

Course literature

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.