

SUBJECT DESCRIPTION FORM

SUBJECT CODE: HTI4236

SUBJECT TITLE: Lower Limb Orthotics

CREDITS: 4

PRE-REQUISITES: HTI2121 Introduction to Biomechanics
HTI2122 Mechanics of Tissues & Biomaterials

CO-REQUISITES: HTI3141 Orthopaedics, Traumatology & Rehabilitation

RESPONSIBLE DEPARTMENT: Department of Health Technology & Informatics

RESPONSIBLE MEMBER OF THE ACADEMIC STAFF:
Dr. Aaron K.L. LEUNG

CONTACT HOURS:

Lecture	28 hours
Tutorial	7 hours
Laboratory/Demonstration	<u>63 hours</u>
Total Contact	98 hours

RATIONALE:

This subject provides students with the principles in the prescription, design, fabrication, fitting and evaluation of lower limb orthotic devices. The series progressively integrate the health and engineering studies, which the students have taken as part of their academic studies. Those academic studies will form the basis for the derivation of the scientific principles used in the practice of lower limb orthotics.

LEARNING OUTCOMES:

Students will be able to carry out the following procedures, in a safe manner, according to the patients' conditions.

- To assess the patients
- To prescribe orthotic interventions
- To take measurement on the patients
- To design appropriate orthotic devices
- To perform the technical process
- To fit the orthoses
- To evaluate the interventions
- To communicate with the patients effectively

SYLLABUS:

Review of the relevant anatomy; basic biomechanics of lower extremity; pathomechanics of lower extremity; introduction to lower limb orthotics; clinical assessment of lower extremity; materials and components; biomechanics of lower limb orthotics; lower limb orthotics for different disorders and clinical conditions. The levels of orthotic intervention include: foot orthotics, ankle-foot orthotics, knee orthotics, knee-ankle-foot orthotics and hip-knee-ankle foot orthotics. Fracture bracing, walking aids and introduction on reciprocating gait orthoses are also covered.

TEACHING-LEARNING METHODS:

The lectures will be delivered both on-line and supplemented with face to face tutorial and demonstrations and laboratory sessions. The essential instruction on clinical and technical aspects will be delivered by the academic staff, within the subject contact hours. During these contact hours students will also be required to learn and demonstrate their competence in patient safety, assessment, prescription, measurement and design, technical procedures, fitting and evaluation, and communication under the supervision of the academic staff. An “Open-Laboratory” policy will be implemented to facilitate students to complete the assigned work under the supervision of laboratory staff.

ASSESSMENT:

Each of the individual learning outcomes will be assessed as part of the integrated outcome demonstrated by the student in patient care. Individual orthotics design and fitting projects will be assessed with direct feedback from the model patients/subjects at various stages, as well as from the instructors throughout the process. In the process, students will also learn how to interact with the patients. At the completion of individual assignments, students will be guided to critique the work of other fellow students under the facilitation of the instructor. This is done to maximize the learning experience by learning not only from one’s own experience but also from those of the fellow students.

A final examination will be used to establish that the student has understood and can integrate the factual materials required to provide lower limb orthotics service.

Coursework	50%
Final Examination	50%

In order to pass the subject, a student must achieve at least grade D in **BOTH** coursework and examination.

REFERENCE MATERIALS:

1. Hughes J. (ed.) Footwear and Footcare for Disabled Children. Disabled Living
2. Redford J.B. Orthotics Etcetera. Williams and Wilkins, 1980.
3. Donald S.G. Prosthetics & Orthotics, Appleton & Lange, Norwalk, Conn., 1990.
4. Wilton H. et al. (ed.) Atlas of Orthotics: Biomechanical Principles and Application, Mosby, 1985.
5. Aisen M.L. Orthotics in Neurologic Rehabilitation Demos, New York, 1992.
6. Tremaine M.D. and Awad E.M. The Foot and Ankle Sourcebook: Everything You Need to Know, Lowell House, Los Angeles, 1995.
7. Donatelli R.A. (ed.) The Biomechanics of the Foot and Ankle, F.A. Davis, Philadelphia, 1996.
8. Reiley M.A. Guidelines for Prescribing Foot Orthotics, Slack, NJ, 1995.
9. Hunter S., Dolan M.G. and Davis J.M. Foot Orthotics in Therapy and Sport, Human Kinetics, Ill., 1995.
10. Weber D. Clinical Aspects of Lower Extremity Orthotics, CAPO, Ontario, 1993.
11. Philips J.W. The functional Foot Orthosis, Churchill Livingstone, New York, 1990.
12. Nawoczenki D.A. and Epler M.E. Orthotics in Functional Rehabilitation of the Lower Limb, W.B. Saunders, 1997.
13. Seymour R. Prosthetics and Orthotics: Lower Limb and Spinal. Lippincott Williams & Wilkins, 2002.
14. Lusardi MM and Nielsen CC. Orthopaedics and Prosthetics in Rehabilitation. Butterworth-Heinemann, 2000.
15. Merriman LM and Turner W. Assessment of the Lower Limb. Churchill Livingston, 2002.