

<b>Course Title</b>	<b>Functional Physiotherapy Rehabilitation</b>			
<b>Course Code</b>	PHYS316			
<b>Course Type</b>	Elective			
<b>Level</b>	Bachelor (Level 1)			
<b>Year / Semester</b>	3 <sup>d</sup> / Spring			
<b>Instructor's Name</b>	Dr Julia Moissoglou Missitzi			
<b>ECTS</b>	6	<b>Lectures / week</b>	3	<b>Laboratories/week</b>
<b>Course Purpose</b>	The aim of the course is to introduce students to the basic concepts of materials and the necessity of manufacturing orthotics and prostheses. To acquire the knowledge of the mode of operation and the ability to choose the corresponding orthotic related to the existing dysfunction and the prosthesis that will replace the functional deficits.			
<b>Learning Outcomes</b>	<p>By the end of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• Compare and contrast the materials most commonly used in current orthoses and prostheses</li> <li>• Conduct biomechanical evaluation of the lower extremities and identify deformations and deviations from normal.</li> <li>• Know the basic mechanical properties of widely used materials that determine how they will be used in orthotic and prosthetic devices.</li> <li>• Understand the function and operating schemes of various prosthetic and orthotic elements.</li> <li>• advice the patient in the use of cleaning and proper application of orthotic machines and prostheses.</li> <li>• Be able to re-educate gait and advanced functional activities, depending on the type of prosthesis</li> </ul>			
<b>Prerequisites</b>	None	<b>Co-requisites</b>	None	
<b>Course Content</b>	<ul style="list-style-type: none"> <li>• Introduction to orthotics. The basic mechanical properties of commonly used materials that determine how they will be used in orthotic and prosthetic devices.</li> <li>• Selection of the corresponding orthotic device in relation to the dysfunction and the corresponding prosthesis in relation to the anatomical deficit.</li> <li>• Upper limb orthotics: hand, wrist, elbow and shoulder.</li> </ul>			

	<ul style="list-style-type: none"> <li>• Foot orthotics: Determination of special footwear needs for people with arthritis, gout, diabetes, peripheral vascular disease, hemiplegia, or congenital deformity of the foot.</li> <li>• Disorders of foot function. Footprint, static and dynamic. Construction and operation of soles</li> <li>• Principles of construction and operation of orthotics of the lower limbs: tibiopedic, femoral and lumbofemoral devices.</li> <li>• Orthotic machines for spinal stabilization of the spine. Indications and contraindications for the use of spinal orthotic machines. Complications associated with the use of orthoses</li> <li>• Orthotic machines for correcting spinal deformities (scoliosis, kyphosis). Mechanism of action.</li> <li>• Special orthotic machines to limit the range of motion of a joint and continuous controlled passive movement machines. (CPM)</li> <li>• Standing devices and special orthotic constructions for children. Types of wheelchairs. Walking elbow crutches.</li> <li>• Amputations and prostheses - frequency and causes of amputations - pre-operative and post-operative physiotherapeutic care of the stump. Bandaging, - exercise of central muscles.</li> <li>• Upper limb amputations: options for prosthesis (no prosthesis, passive prosthesis, somatic prosthesis, externally powered systems or hybrid prosthetic systems).</li> <li>• Disturbances of the gait cycle in stumps of the leg, tibia and femur. Walking training.</li> <li>• Training patient with intent to sit in the chair, go up and down stairs, walking variations.</li> <li>• Aids in the daily life of patients. Kitchen utensils, toilet, self-service accessories.</li> <li>• Formulation of appropriate physical therapy intervention for rehabilitation of people with recent lower limb amputation. Short-term and long-term goals, functionality of residual limbs.</li> </ul>
<p><b>Teaching Methodology</b></p>	<p>The course is delivered to the students through lectures, using computer-based presentations programmes. Case Studies, Discussion, Questions / Answers are also used depending on the content of the lecture. Lecture notes and presentations are available online for use by students in combination with textbooks. Relevant material published in international scientific journals is also used to follow the latest developments related to the subject of the course.</p>
<p><b>Bibliography</b></p>	<p><u><b>Textbooks:</b></u></p> <p>Crossley J. (2021) Functional Exercise and Rehabilitation The Neuroscience of Movement Pain and Performance, Taylor &amp; Francis</p>

	<p>Magee D. (2013) Orthopaedic physical assessment. 5th Edition. W.B Saunders Company, 2008. 13. Melzack R &amp; Wall P. Textbook of pain. 6th Edition. London: Churchill Livingstone.</p> <p>Mattingly, C. &amp; Fleming, M.H. (1994). Clinical reasoning: Forms of inquiry in a Therapeutic Practice. Philadelphia.</p> <p>Miller M, Hart J. (2012) Review of Orthopaedics. 6th Edition. Philadelphia, PA: Saunders Elsevier</p> <p>Peggy A. Houglum &amp; Dolores B. Bertoli (F.A. Davies Co) (2014) Brunnstrom's Clinical Kinesiology, 6th Edition&gt; Greek translation; editorial house Parissianou. ISBN 978-960-583-0038</p> <p>M. Nordin &amp; V. Frankel, (2001) Basic Biomechanics of the Musculoskeletal System, Lippincott Williams &amp; Wilkins, USA</p> <p>Bowker JH, Michael JW, eds. (1992) Atlas of Limb Prosthetics: Surgical, Prosthetic, and Rehabilitation Principles. 2nd ed. St. Louis: Mosby, 1992:3–15.</p> <p><b><u>References:</u></b></p> <p>Wang, J. (2021). Phantom Limbs and Mirror Therapy: Brain Plasticity and Future Treatment for Brain Disorders and Injuries. <i>Frontiers in Medical Science Research</i>, 3(4).</p> <p>Wang, J. (2021). Phantom Limbs and Mirror Therapy: Brain Plasticity and Future Treatment for Brain Disorders and Injuries. <i>Frontiers in Medical Science Research</i>, 3(4).</p> <p>Canning, C. G., Allen, N. E., Nackaerts, E., Paul, S. S., Nieuwboer, A., &amp; Gilat, M. (2020). Virtual reality in research and rehabilitation of gait and balance in Parkinson disease. <i>Nature Reviews Neurology</i>, 16(8), 409-425.</p> <p>Warnier, N., Lambregts, S., &amp; Port, I. V. D. (2020). Effect of virtual reality therapy on balance and walking in children with cerebral palsy: a systematic review. <i>Developmental neurorehabilitation</i>, 23(8), 502-518.</p> <p>Maggio, M. G., Latella, D., Maresca, G., Sciarrone, F., Manuli, A., Naro, A., ... &amp; Calabrò, R. S. (2019). Virtual reality and cognitive rehabilitation in people with stroke: an overview. <i>Journal of Neuroscience Nursing</i>, 51(2), 101-105.</p>
<b>Assessment</b>	<p><b><u>Continuous Assessment (50%):</u></b></p> <p>The assessment may include any combination of the following:</p> <ul style="list-style-type: none"> <li>• <b>Written and/or oral</b>, and it consists of multiple – choice, short answer, open ended questions and/or essay questions, that align with the learning outcomes, to assess the theoretical knowledge gained. The questions ensure that students will demonstrate a deep understanding of the subject matter and apply their knowledge to solve problems or analyse scenarios.</li> <li>• <b>Assignments and projects</b> provide opportunities for students to apply their theoretical knowledge in practical ways. The</li> </ul>

	<p>assignments are designed in a way that require critical thinking, research, analysis, and synthesis of information. Projects can be individual, self directed learning or group-based and should align with the learning outcomes. Students are evaluated on the quality of their work, the depth of understanding displayed, and their ability to effectively communicate their ideas. Assignments and projects may be individual or group work.</p> <ul style="list-style-type: none"> <li>• Use of <b>case studies or problem-solving exercises</b> to assess how students can apply theoretical knowledge to real-life situations. Students are presented with scenarios that require analysis, critical thinking, and the application of theoretical concepts and they are assessed based on their ability to perform verbal presentations, viva voce examinations, identify and evaluate relevant information, propose solutions, and provide justifications for their choices.</li> <li>• <b>Online quizzes or interactive assessments:</b> Online quizzes or interactive assessments, reflective writing can be used through the Moodle platform, to create quizzes with various question formats. These assessments can be self-paced or timed, and immediate feedback can be provided to students.</li> <li>• <b>Classroom discussions and debates:</b> Students engage in classroom discussions and debates to assess their theoretical knowledge. Active participation is encouraged to hone their critical thinking skills by posing open-ended questions and facilitating dialogue.</li> <li>• <b>Peer and self-assessment:</b> Students are assigned to review and provide feedback on each other's work, encouraging them to critically evaluate their peers' understanding and provide constructive suggestions.</li> </ul> <p><b>Final Exam (50%):</b> comprehensive final exam, to assess students' overall theoretical knowledge. These assessment covers a broader range of topics and learning outcomes from the entire program of study, to gauge the students' understanding and integration of knowledge across different areas.</p>
<b>Language</b>	Greek / English