Queen's University School of Kinesiology and Health Studies



Course Name: KNPE 454/3.0 Clinical Biomechanics	Course Instructor: Dr. Pouya Amiri	Contact Hours: Lectures: 1 x 3 hrs/wk x 12 weeks Prerequisite: KNPE 254/3.0 or KNPE 353/3.0 Level 3 or above in a KINE plan. Exclusion:		
Course Description: This advanced course will present experimental and analytical biomechanical techniques to quantify forces and moments within joints during movement. The applications of these methods in the context of healthy and impaired human movement will be discussed. This is accompanied by hands-on projects, where students will apply the learned techniques to experimental data of human movement.		Course Texts: None Course Notes: Will be available on onQ.		
 Learning Outcomes: Operate traditional biomechanical equipment, including motion capture systems and force platforms. Perform biomechanical analysis of human movement, including inverse kinematics and inverse dynamics using experimental data. Gain an understanding of the biomechanical characteristics of some of the most common musculoskeletal disorders, including osteoarthritis, lower limb amputation, ACL injuries, balance impairment, and stroke. 		Course Evaluation: LAB 1 Report LAB 2 Report Seminar on Selected Topics Final Project Report Final Project Presentation Paper Reviews	15% 20% 15% 25% 10% 15%	
Course Outline				
Course introduction Inve		erse kinematics		
Force measurement		ling and Inverse kinematics		
Motion capture				
Notion capture Data preparation				
Motion data collection	in data collection			
Seminars on Selected Topics Project		iect Presentations	ect Presentations	