UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title:	Clinical Movement Analysis
Module Code:	MHT5011-B
Academic Year:	2019-20
Credit Rating:	20
School:	Department of Biomedical and Electronics Engineering
Subject Area:	Medical and Healthcare Technology
FHEQ Level:	FHEQ Level 5
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	**Hours**
Lectures	24
Practical classes and workshops	12
Tutorials	12
Directed Study	152

Availability	
Occurrence	**Location / Period**
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims
To learn about how the human body experiences forces in static and dynamic situations and the consequences of those forces; To become conversant with how gait and posture is analysed and evaluated in a clinical context

Outline Syllabus

Introduction to the biomechanical concepts associated with gait and posture;
Covers the methods and equipment used in undertaking quantitative clinical assessment of gait and posture, and provides examples and an overview of measurement outcomes and the interpretation of data/results, along with the limitations in such interpretations;
Outlines how to determine internal joint forces and torques via inverse dynamics modelling and provides much practice of such modelling;

Learning Outcomes

1	Apply methods and understanding for analysing and quantifying human posture and locomotion (gait); including use of forceplatforms, motion capture systems, biomechanical modelling approaches;
2	Describe technical aspects of lab equipment, including the theory on which they are based;
3	Analyse, manage and interpret data from such equipment;
4	Undertake biomechanical modelling to determine joint forces and moments;
5	Critically evaluate gait and posture (balance) analyses techniques and approaches;

Learning, Teaching and Assessment Strategy

Concepts are introduced using formal lectures and selected reading. Deeper understanding is developed during tutorial classes covering worked examples, and further enhanced using laboratory practicals. Oral feedback is given during the laboratory sessions and tutorial classes. Case studies are examined to further develop student learning and provide an appreciation of clinical aspects of gait and posture analysis and interpretation.

Formative assessment of i) practical lab work will assess ability to analysis, present and interpret data, and ii) tutorial work, where biomechanical modelling is used to determine joint forces and moments, will be self-assessed by going through worked examples and providing model solutions.
Summative assessment: i) write-up of simulated clinical gait analysis report will assess ability to analysis, present, and interpret data (LO's 1,3), and ii) classed-based test will assess understanding of inverse dynamics calculations and understanding of the methods used for analysing and quantifying human posture and locomotion (LO's 2,4,5).

This module satisfies the below Learning Outcomes as specified by the Accreditation of Higher Education Programmes: Third Edition (AHEP3) as published by The Engineering Council in-line with the UK Standard for Professional Engineering Competence (UK-SPEC). These outcomes specify six key areas of learning: Science and Mathematics (SM), Engineering Analysis (EA), Design (D), Economic, Legal, Social, Ethical and Environmental Context (EL), Engineering Practice (P) and Additional General Skills (G).
SM1b, SM2b, SM3b, EA1b, EA2, EA3b, EA4b, D1, D2, EL1, EL2, EL5, P1, P2, P3, P4, P5, P6, P8, G1, G2.
Further details of these learning outcomes can be found at https://www.engc.org.uk/.

Mode of Assessment				
Type	**Method**	**Description**	**Length**	**Weighting**
Formative	Laboratory Report	Data collection, processing and interpretation		%
Formative	Laboratory Report	Data collection, processing and interpretation		%
Summative	Laboratory Report	write-up of simulated clinical gait analysis report	0-2000 words	50%
Summative	Classroom test	mixture of discussion type questions and calculation questions	2 hours	50%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html.

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.