UNIVERSITY of BRADFORD

Module Descriptor

Clinical Biomechanics

Module Code:	MHT7008-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Biomedical and Electronics Engineering
Subject Area:	Medical and Healthcare Technology
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	12
Seminar	24
Tutorials	12
Laboratory	6
Directed Study	146

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To stimulate an understanding of the concepts underlying clinical biomechanics, and promote an understanding of how the application of biomechanics can provide insights into balance and locomotive disorders and/or adaptations.

Outline Syllabus

Covers 3D and advanced gait and posture analyses; including using inverse dynamics modelling to determine joint moments and muscle powers. Emphasis on how such is used in a clinical context (e.g. for diagnosis, assessment of rehabilitation outcome, etc). Weekly round-table discussion is used to develop a critical understanding of the literature, on for

example topics such as:
- is knee osteoarthritis a biomechanical problem and can we use biomechanical variables for early detection;
- what are the gait and balance deficits in inviduals with neural disorders;
- how does the foot deform during ground contact to attenuate the reaction forces from the ground, etc.?

Module Learning Outcomes

On successful completion of this module, students will be able to...

1 Describe a range of common human movement disorders and adaptations

2 Critically evaluate and analyse biomechanical/human movement data

3 Review and critically evaluate the application of biomechanics in the clinical context.

4 Apply various methods for analysing and quantifying human movement with focus on biomechanical modelling to determine joint forces and momemnts.

5 Apply biomechanical theory to gain insights into balance, locomotive disorders and/or movement adaptations.

6 Scientifically critique key research articles in the subject area.

Learning, Teaching and Assessment Strategy

Analyses approaches are introduced and understanding is developed during tutorial classes and practical work. Directed reading of key research papers in the area are used to explore main concepts and round-table discussions of these papers challenge understanding. Formative feedback will occur informally during the weekly tutorials and round table discussions.
Coursework consisting of three elements: i) classed-based test will assess understanding of inverse dynamics calculations (LO4,5); ii) contribution to round-table discussions will assess critical thinking and understanding of key concepts and of the relevant literature (LO1,2,3,6); and iii) written report will assess ability to analysis, present, and interpret data (LO2,4,5).

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Formative	Coursework	Student contribution round-table discussions		%	No
Summative	Coursework	Formal write-up of lab practical investigating the	1600 words	40%	No

		biomechanics of human locomotion			
Summative	Coursework	Tutor evaluation of contribution to weekly 'round table' discussion sessions of key research papers in the subject area		25%	No
Referral	Coursework	Critical review of literature	-3000 words	65%	Yes
Summative	Classroom test	joint kinetics calculations and interpretation	2 hours	35%	Yes
Referral	Classroom test	joint kinetics calculation	1 hour	35%	No

Legacy Code (if applicable)

ENG4310D

Reading List

To view Reading List, please go to **rebus:list**.