Module Definition Form (MDF)

Module code: MOD005683	**Version:** 5 **Date Amended:** 12/Jul/2023

1. Module Title
Practical Competencies in Biomechanics

2a. Module Leader
Jack Wells

2b. School
School of Psychology, Sport and Sensory Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Sport and Exercise Science, BSc (Hons) Sports Coaching and Physical Education BSc (Hons) Strength and Conditioning with Rehabilitation		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

The key skills learnt in Level 4 now means you have an understanding of how the human is able to move and the different types of motion a body can have. The module Practical Competencies in Biomechanics advances your understanding in Biomechanics through developing an understanding of how to measure and record a sporting performer using a variety of approaches commonly used by biomechanists. Upon successful completion of the module, you will have a theoretical and practical understanding of the key competencies within the discipline of Biomechanics. Following the British Association of Sport and Exercise Science (BASES) 'guidelines' for biomechanics, this module will cover the following key areas;

- Motion analysis in both 2D and 3D perspectives
- Electromyography (EMG), its use and practical application
- Kinanthropometry in Biomechanics and Centre of Mass (CoM) modelling
- Centre of pressure & postural control

Introduction to Force plates This is an applied module. You will be taught the key theoretical underpinning and then be expected to engage in the practical application of the topic; which will take the form of seminar, lab practical or computer session. Your ability to proficiently complete a range of practical competencies relevant to the discipline of Biomechanics will form the key assessment within the module. In this module you will study and explore the content within the context of real sporting actions such as: standing, walking, running, jumping and throwing. The module will enable you to develop transferable skills such as IT, numeracy and communication and will encourage you to become an independent thinker with good study habits

6b. Outline Content

• Motion analysis in both 2D and 3D perspectives

• Rotational dynamics - Rotation and joint angle measures

• Lever systems, muscle actions and torque

• Dynamometry

• Electromyography (EMG), its use and practical application

• Kinanthropometry in Biomechanics and Centre of Mass (CoM) modelling

• Centre of pressure & postural control

• Force plates

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources
2-D and 3-D motion analysis systems along with accompanying software, Force plate system along with accompanying software Dynamometer Electromyography (EMG) equipment with accompanying software Computer facilities Cambridge Centre for Sport and Exercise Sciences Laboratory Technician support

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Comprehend the methods of acquisition, interpretation and analysis of information and data acquired from the assessment and measurement tools
2	Intellectual, practical, affective and transferrable skills	Use data acquired from the assessment and measurement tools to evaluate the Biomechanical aspects of sports performance in the laboratory and/or a field setting
3	Intellectual, practical, affective and transferrable skills	Present analysed information acquired from the measurement and assessment tools in order to give insight into human movement

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	24	1-3	Lectures 2 hours per week
Other teacher managed learning	12	1-3	Seminar consisting of computer, lab or practical based session 1 hr x 12 weeks
Student managed learning	114	1-3	Completion of weekly readings, tasks and preparation for assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Practical	1-3	0 (%)	Pass/Fail	100 (%)
Practical competencies exam. Equivalent to 1000 words.					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	1-3	100 (%)	Fine Grade	30 (%)
Portfolio of coursework to include written report submission and in-class assessment (1250 word equiv.)					

Assessment components for Element 011				
Component No.	**Assessment Title**	**Submission Method**	**Weighting (%)**	**Components needed for Mark Calculation?**
011/1	In-class tests	Canvas	20 (%)	All
011/2	Written Assignment	Canvas	80 (%)	

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]