

Version: 5 Date Amended: 14/Sep/2020

1. Module Title

Applied Biomechanics

2a. Module Leader

Andrew Morrison

2b. School

School of Psychology, Sport and Sensory Sciences

2c. Faculty

Faculty of Science and Engineering

3a. Level

6

3b. Module Type

Standard (fine graded)

4a. Credits	
15	

4b. Study Hours	
150	

5. Restrictions						
Туре	Module Code	Module Name	Condition			
Co-requisites:	None					
Exclusions:	None					
Courses to which this module is restricted:	BSc (Hons) Sport and E with Rehabilitation	xercise Science BSc (Hons) Strength and Co	onditioning			

6a. Module Description

An effective support team makes use of various sports and exercise sciences, such as physiology, biomechanics and psychology, to help improve the performance of an athlete, team or the quality of life of the general public. The module builds on all the concepts previously studied in Level 4 and 5. This includes: motion, (displacement, velocity, acceleration), force and momentum (the ground reaction force, the net force on the human, free-body diagrams and force vector diagrams), lever systems and the musculo-skeletal system, muscle contraction types and the production of force, the centre of mass, projectile science and work, energy and power. Additionally, this module concentrates on the application of biomechanics to improve technique and reduce predisposition to injury for sport or clinical populations. The aim of the module is to provide the knowledge and skills to successfully prescribe and/or deliver sport and exercise biomechanics interventions as a coach or sport scientist.

During lecture and laboratory sessions you will work to develop the skills to undertake your own biomechanics assessment. You will then carry out this assessment with an external member and report back your findings. You will also critically evaluate the influence of an applied biomechanist in a coaching or clinical setting and learn about the needs and issues of different users.

6b. Outline Content

- Advanced linear kinematics and kinetics
- Angular Kinematics
- Angular Kinetics
- Motion capture and analysis using Vicon, EMG and force plates
- Application of biomechanical theory to practice
- · Application of tools of biomechanics to practice

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Cambridge Centre for Sport and Exercise Sciences, Multi-purpose labs, Computer rooms.

7. Learning Outcomes (threshold standards)				
No.	Туре	On successful completion of this module the student will be expected to be able to:		
1	Knowledge and Understanding	Demonstrate a critical appreciation of biomechanical knowledge in relation to human performance		
2	Knowledge and Understanding	Evaluate applied biomechanics practice for specific populations to inform conclusions		
3	Intellectual, practical, affective and transferrable skills	Apply biomechanical understanding in a practical context		
4	Intellectual, practical, affective and transferrable skills	Present advanced applied biomechanics interventions to a wider audience		

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	22	1-2	2-hour lectures	
Other teacher managed learning	11	3-4	1-hour practical or computer workshops	
Student managed learning	117	1-4	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	Coursework	1-4	100 (%)	Fine Grade	30 (%)
Written scientific report and presentation on a sports or exercise biomechanics case study (3000 word equivalent)					

Assessment components for Element 010					
Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?	
010/1	Client Feedback Presentation	Canvas	40 (%)	All	
010/2	Scientific Report	Canvas	60 (%)		

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]