Module Definition Form (MDF)

Module code: MOD010996	Version: 1 Date Amended: 07/Mar/2025

1. Module Title
Functional Anatomy and Biomechanics of Animal Movement

2a. Module Leader
Lauren Hunt

2b. School
Writtle School of Agriculture, Animal and Environmental Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions			
Type	**Module Code**	**Module Name**	**Condition**
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc Equine Therapy, rehabilitation and performance, BSc Animal Therapy, rehabilitation and performance, BSc Canine Therapy rehabilitation and performance. MVetphys Veterinary Physiotherapy, Canine and Equine.		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

In this module, you'll be provided with a thorough understanding of the neuromusculoskeletal conditions in animals, including common tissue dysfunctions and their effects on movement. You'll be introduced to movement theories and various biomechanical analysis techniques specifically applied to animal locomotion. You'll learn to analyse the different types of motion, discussing the anatomical and mechanical factors that influence movement.

The knowledge you gain will be applied to a wide range of species in various settings, combining theoretical learning with practical sessions. You'll explore the link between tissue assessment (such as muscle tone, joint health, and soft tissue condition) and how these factors affect an animal's ability to move efficiently and comfortably while considering the various disciplines and their required movements.

6b. Outline Content

MUSCULOSKELETAL TISSUE:

To cover the axial, appendicular, bony landmarks, muscle function, origins and insertions, joint structure. To include function and dysfunction of these structures. An examination of the stages of tissue healing and tensile strength of structures during the healing process will be explored. Anatomical location regarding surface anatomy will be assessed within this module, to build on the introduction in Animal Anatomy, Physiology and Anatomical Identification.

NEUROMUSCULOSKELETAL TISSUE STATE AND DYSFUNCTION:

Investigating the various states and dysfunctions of neuromusculoskeletal tissues, to understand their impact on locomotion and posture.

MECHANICAL MODELS OF LEGGED LOCOMOTION:

exploring models of legged locomotion (the inverted pendulum model of walking and the spring-mass model of running).

KINEMATICS AND KINETICS:

Using mechanical principles to describe movements (kinematics) and the forces associated with them (kinetics).

ENERGETICS: cost of movement, power and work

GAIT ANALYSIS METHODS: Evaluating and applying different methods to analyse movement in animals. The use of data collection equipment, software and development of IT skills to ensure digital literacy.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Super lab and dissection specimens

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	Develop a comprehensive understanding of functional anatomy and musculoskeletal tissue state in relation to biomechanical movement
2	Knowledge and Understanding	Interpret the changes in tensile strength of tissues across different stages of the healing process, assessing the implications for rehabilitation.
3	Intellectual, practical, affective and transferrable skills	Use their theoretical knowledge of anatomic structure to assess live animals, identifying adaptations tissue states and dysfunction.
4	Intellectual, practical, affective and transferrable skills	Appraising animal motion through kinematics, kinetics, and energetics, and using tools for movement evaluation, essential for performance.
5	Intellectual, practical, affective and transferrable skills	Evaluate observational skills informed by quantitative biomechanical data to develop assessment protocols

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2026/7	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	48	1-5	2hr Theory per week.
Other teacher managed learning	24	1-5	1hr Practical/workshop/seminar
Student managed learning	228	1-5	Independent directed learning
TOTAL:	300		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1,2	30 (%)	Fine Grade	30 (%)
In class MCQ tests					

Assessment components for Element 010

Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
010/1	MCQ1		33 (%)	All
010/2	MCQ 2		33 (%)	
010/3	MCQ 3		34 (%)	

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	3-5	70 (%)	Fine Grade	30 (%)
Narrated video and report					

Assessment components for Element 011

Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
011/1	Narrated video 15 mins		40 (%)	All
011/2	Report 2000 words		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]