

Module code: MOD011334	Version: 1 Date Amended: 11/Apr/2025
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1. Module Title
Animal Breeding and Development

2a. Module Leader
Nhenna Ugwu

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
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:	None		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module introduces you to the fundamental principles of animal reproduction and breeding, providing the essential biological knowledge required for further study in animal science and management. You'll explore the key physiological processes in male and female reproductive systems, including reproductive anatomy, hormonal control, puberty, gametogenesis, fertilisation, pregnancy and parturition.

You'll learn about the early development of embryos and the physiological mechanisms that regulate reproductive cycles across a range of domestic and wild animal species. Beyond biology, you'll be introduced to the concepts of inheritance and Mendelian genetics, exploring how these principles underpin selection in breeding programmes.

The module also offers a hands-on introduction to assisted reproductive technologies (ART), such as artificial insemination and embryo transfer, and how these technologies are utilised in livestock production, pet breeding and conservation efforts. An emphasis is placed on the biological basis of these technologies rather than strategic or ethical considerations, which are covered in future modules.

Through a combination of lectures, practical sessions and case-based learning, you'll develop a strong foundation in the science of animal reproduction and breeding, preparing you for more specialised modules in animal genetics and breeding strategy.

6b. Outline Content

Physiology of reproduction – knowledge of physiology of hormones and pheromones of reproduction, ovarian and testicular function, sperm and oocyte development - conception. Factors influencing fertility - oestrus detection, causes of infertility and subfertility, causes of abortion.

Embryonic and placental development – blastocyst development, embryogenesis embryonic membrane development and differentiation (chorion, amnion, allantois) and later stages of embryonic growth and development. Also, placental classification, function, maturation, structural growth and development throughout gestation.

Genetics - domestication, Mendelian and quantitative traits; types of gene action; variation and its measurement.

Breeding - selection between and within breeds; aids to selection - pedigrees, performance and progeny tests; factors affecting rates of genetic gain and the response to selection.

Technology – manipulation of reproduction, artificial intelligence (AI), in vitro fertilisation (IVF), cryopreservation, somatic cell nuclear transfer, embryo transfer, multiple ovulations. Current applications and potential for future developments in both domesticated species and conservation.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

None

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	Demonstrate knowledge of the anatomy and physiology of male and female reproductive systems.
2	Knowledge and Understanding	Apply the principles of simple and complex inheritance to animal breeding systems
3	Knowledge and Understanding	Discuss the key principles of planning animal breeding programs in domestic and wild contexts.
4	Intellectual, practical, affective and transferrable skills	Evaluate the factors that influence fertility, reproductive performance and ARTs.

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	30	1-4	Formal lectures, workshops and in-class group discussions.
Other teacher managed learning	6	1-4	On-farm practical sessions on the applications of ART
Student managed learning	114	1-4	Essential and recommended reading from the reading lists, background research and completion of assignments. Directed reading materials and learning activities will be provided in class and on Canvas to support preparation for lectures, assignment and exam.
TOTAL:	150		

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	1,4	60 (%)	Fine Grade	30 (%)

Case study analysis (1000 words) – Students will choose one of three case studies presented and produce a structured written analysis that demonstrates critical thinking, contextual understanding and evidence-based reasoning.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1-4	40 (%)	Fine Grade	30 (%)

Report (2000 words) – on factors that influence reproductive success. May comprise of a report of 2000 words maximum length or analysis of fertility data from an animal breeding unit.

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]