FARM H2704: Genetics and Breeding

Module Title:	Genetics and Breeding
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	No Programmes

Teaching & Learning Strategies:	Formal lectures will be supplemented by case study and group work and farm visits. Guest lecturers from animal and plant breeding centres in Ireland will be invited to give students a sense of the breadth of knowledge that exists in Ireland on this topic. Group discussion will be encouraged to critique breeding programmes on farm.

Module Aim:	Learns will gain an appreciation of how genetics has greatly advanced how we breed our animals as well as the importance for a holistic approach to animal and crop breeding. The practical implications of breeding and genetics will be imbedded into the content of the module. There will be a strong focus on how the use of conventional and transgenic breeding programmes impact upon the sustainability of the farm system.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Explain the basic laws of genetics and their application in plant and animal breeding
LO2	Recognize and apply plant and animal breeding methods and discuss the role of sexed semen, embryo transfer, cloning and transgenic breeding technologies in sustainable farm systems, including societal acceptance.
LO3	Describe and evaluate Economic Breeding Index (EBI) and other management tools that aim to advance the productivity of animal and crop production systems.
LO4	Know how genetically modified organisms (GMOs) are produced and their use in agriculture.

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

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Module Content & Assessment

Indicative Content
Plant breeding • Basics of plant breeding. Variety types, seed production; Intellectual Property (IP) issues; seed quality; economics of home-saved seed.
Animal breeding • Basics of animal breeding and the practical use of genetics in animal breeding
Novel Genetic Manipulation Techniques for Plants • Genetically modified organisms (GMOs) and their use in agriculture –transformation, and hybrid sterility.
Insemination and Cloning of Animals • Developments in Artificial Insemination and cloning of livestock

Assessment Breakdown	%
Continuous Assessment	25.00%
Project	25.00%
End of Module Formal Examination	50.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Case Studies	Plant Breeding: Case study of varietal selection programmes for plants in Ireland	1,2,3	25.00	n/a

Project

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	Students will conduct a project on breed improvement programmes relating to the animal agriculture including how they have been implemented in Ireland.	2,3,4	25.00	n/a

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Terminal Examination	1,2,3,4	50.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	1.00
Practicals	30 Weeks per Stage	0.50
Independent Learning	30 Weeks per Stage	1.83
	Total Hours	100.00