

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	
<i>On successful completion of this module the learner should be able to:</i>	
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 <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
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

