

<b>Module Title:</b>	Genetics and Breeding
<b>Language of Instruction:</b>	English
<b>Credits:</b>	5
<b>NFQ Level:</b>	6
<b>Module Delivered In</b>	<a href="#">4 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	Formal lectures will be supplemented by case studies and site visits. Guest lecturers from various animal and plant breeding programmes 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.
<b>Module Aim:</b>	Learns will gain an appreciation of the role of genetic and breeding technologies in advancing the sustainability of animal and crop production systems. The importance for a holistic approach to animal and crop breeding will also be emphasised. 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
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
<b>Incompatible Modules</b> <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
<b>Co-requisite Modules</b>
No Co-requisite modules listed
<b>Requirements</b> <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
<b>Plant breeding</b> • Basics of plant breeding. Variety types, seed production; Intellectual Property (IP) issues; seed quality; economics of home-saved seed.
<b>Animal breeding</b> • Basics of animal breeding and the practical use of genetics in animal breeding
<b>Novel Genetic Manipulation Techniques for Plants</b> • Genetically modified organisms (GMOs) and their use in agriculture –transformation, and hybrid sterility.
<b>Insemination and Cloning of Animals</b> • 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
Written Report	Students will be required to submit written reports on the outcomes of specific lectures / field visits. These reports are to be written in a farmer facing style summarising the content delivered during the lecture.	1,2,3	25.00	n/a

No Project

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**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	2.00
Lecturer Supervised Learning	12 Weeks per Stage	0.33
Independent Learning	12 Weeks per Stage	3.00
Lecturer Supervised Learning	12 Weeks per Stage	0.67
Total Hours		72.00

**Module Delivered In**

Programme Code	Programme	Semester	Delivery
CW_SWOAG_B	<a href="#">Bachelor of Science (Honours) in Organic Agriculture</a>	3	Mandatory
CW_SWSFM_B	<a href="#">Bachelor of Science (Honours) in Sustainable Farm Management and Agribusiness</a>	3	Mandatory
CW_SWOAG_D	<a href="#">Bachelor of Science in Organic Agriculture</a>	3	Mandatory
CW_SWSFM_D	<a href="#">Bachelor of Science in Sustainable Farm Management and Agribusiness</a>	3	Mandatory