

## AGRI S9Z01: Animal Genetics

Module Details	
Module Code:	AGRI S9Z01
Full Title:	Animal Genetics <span>APPROVED</span>
Valid From::	Semester 1 - 2019/20 ( June 2019 )
Language of Instruction:	English
Duration:	1 Semester
Credits::	7.5
Module Owner::	Caroline Gilleran
Departments:	Unknown
Module Description:	This module provides students with an understanding of animal genetics, selective breeding, lineage traceability and epigenetics.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Appraise the use of molecular genetics and selective breeding techniques to improve animal production efficiency.
MLO2	Critically assess and evaluate the role of molecular genetics in animal health.
MLO3	Discuss the importance of parental traceability and molecular markers in animal breeding.
MLO4	Analyse the influence of epigenetics on livestock nutrition, genetics and breeding.
Pre-requisite learning	
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	

Module Indicative Content
<b>Introduction to Genetics</b> DNA, genes, chromosomes and genetic inheritance; Mendelian genetics.
<b>Genetics and Breeding</b> Traditional breeding; Cross breeding; Monogenic and polygenic traits; Indicator traits; Breeding for increased efficiency; Marker assisted selection; Genomic selection; Genome mapping and identification of key genes; Genetic diversity; Factors affecting the rate of genetic gain.
<b>Genetics and Traceability</b> Importance of genetics and traceability for breeding; Tagging; Molecular Parentage testing; Use of molecular markers for traceability.
<b>Genetics and Animal Health</b> The role of molecular genetics in animal health; Genetic and cellular basis of disease susceptibility and resistance in farm animals; Immunological, molecular and cellular events involved in animal response to disease; Identification of key disease resistance genes.
<b>Epigenetics</b> The influence of epigenetics on livestock nutrition, genetics and breeding. Gene expression in areas such as dairy fertility and mastitis resistance. Functional genomics to analyse responses of individual animals (e.g. stress response / environmental responses).

Module Assessment	
Assessment Breakdown	%
Course Work	40.00%
Final Examination	60.00%
Module Special Regulation	

## Assessments

Full Time On Campus			
Course Work			
<b>Assessment Type</b>	Practical/Skills Evaluation	<b>% of Total Mark</b>	30
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	n/a	<b>Learning Outcome</b>	3
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> Laboratory practicals and site-visits. e.g. genetic analysis through PCR, expression patterns of proteins in organisms / tissues, bioinformatics			
<b>Assessment Type</b>	Continuous Assessment	<b>% of Total Mark</b>	10
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	Week 8	<b>Learning Outcome</b>	1,2,3
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> CA component will consist of a class test, essay (or other project), presentation on a relevant (current) topic followed by a discussion/debating session or a similarly relevant assessment. This will cover one or more of the Learning Outcomes for the module.			
No Project			
No Practical			
Final Examination			
<b>Assessment Type</b>	Formal Exam	<b>% of Total Mark</b>	60
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,2,3
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> End of semester final examination			
Reassessment Requirement			
<b>A repeat examination</b> Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.			

## Module Workload

### Workload: Full Time On Campus

<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	This module will consist of 3hrs each week for lectures or practicals (two 3hr practicals per semester)	Every Week	2.50	2.5
Tutorial	Contact	Tutorials will be used to support lectures / practicals	Every Second Week	0.50	1
Online Contact	Contact	On-line discussion forum	Every Week	0.50	0.5
Practical	Contact	This module will contain two 3hr practicals per semester, instead of lectures	Twice per semester	0.00	0
Independent Study	Non Contact	No Description	Every Week	5.00	5
Directed Reading	Non Contact	No Description	Every Week	2.50	2.5
				Total Weekly Learner Workload	11.00
				Total Weekly Contact Hours	3.50

**This module has no Part Time On Campus workload.**

## Module Resources

### *Recommended Book Resources*

T. A. Brown. (2010), Gene Cloning and DNA Analysis: An Introduction, 6th edition.  
T. Grandin, M.J. Deesing (eds). (2014), Genetics and the behaviour of domesticated animals, 2nd edition. Academic Press.

### *Supplementary Book Resources*

T. Brown. (2012), Introduction to genetics, a molecular approach, Garland Science.

### *Recommended Article/Paper Resources*

Current research publications from peer-reviewed journals will be used as additional material.

*This module does not have any other resources*