

Module Title:	Soil Science 2	
Language of Instruction:	English	
Credits:	5	
NFQ Level:	7	
Module Delivered In	No Programmes	
Teaching & Learning Strategies:	Formal lectures, field studies and laboratory work will be used engage the student in the importance of soils in a sustainable agricultural system. Where appropriate, case studies will be used to demonstrate the benefit of soil remediation on crop growth.	
Module Aim:	This module aims to build upon Soil Science 1, further enhancing the students understanding of the importance of soils in a sustainable agricultural system. Specifically, this module will focus on the interaction between the plant, the microbiome and the soil and how they contribute to crop production systems.	
Learning Outcomes		
On successful completion of this module the learner should be able to:		
LO1	Demonstrate a knowledge of the interactions between the plant, the rhizosphere and the soil and how these can be manipulated to enhance crop production	
LO2	Understand the influence of geology and weather on the formation of soils and their subsequent influence on maintenance of soil structure	
LO3	Interpret detailed soil analysis and be capable of giving recommendations of these results for the nutrition of the crop and subsequent effects on animal health	
LO4	Demonstrate a knowledge of the influence of the soil micro and macro biota on soil structure	
LO5	Understand the importance of nutrient cycling within the soil- plant- animal system including the importance of human derived nutrients in the recycling of nutrients	
Pre-requisite learning		
Module Recommendations		
This is prior learning (or a practical skill) that is recommended before enrolment in this module.		
7836	AGRI H2703	Soil science 1
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		

**Module Content & Assessment**

Indicative Content
<b>Ion exchange in soils</b> Cations, Anions, • Cation and Anion Exchange Capacity and movement of ions from soils to roots
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<b>Ion exchange in soils</b> Cations, Anions, • Cation and Anion Exchange Capacity and movement of ions from soils to roots
<b>Soil microbiology</b> Soil microbiology and the effects of micro-organisms on crops • Use of beneficial micro-organisms now on the market and in use in crop production
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<b>Soil microbiology</b> Soil microbiology and the effects of micro-organisms on crops • Use of beneficial micro-organisms now on the market and in use in crop production
<b>Soil acidity and alkalinity</b> • Soil acidity and alkalinity and how they are controlled by farmers
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<b>Macro and Micro-Elements</b> • Macro and Micro-Elements in plant nutrition and how they affect each other in the soil • Fertilization of soil and types and mode of action of fertilizers
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<b>Nutrient cycling</b> The importance of complete nutrient cycles in the maintenance of the soil
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Assessment Breakdown	%
Continuous Assessment	10.00%
Project	20.00%
Practical	20.00%
End of Module Formal Examination	50.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Multiple Choice Questions	MCQ based on learning outcome 1	1	5.00	n/a
Practical/Skills Evaluation	Complete a nutrient recommendation for a farm based on a soil analysis.	3	5.00	n/a

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Conduct a soil survey of a land parcel that the student is familiar with. This would include an assessment of the underlying geology, the influence of local weather and an assessment of the soil horizon. The students will present the findings of this work to their peers	2,3	20.00	n/a

<b>Practical</b>				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Practical/Skills Evaluation	Students will complete reports on laboratory and field studies.	1,2,3,4,5	20.00	n/a

<b>End of Module Formal Examination</b>				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Formal Exam	Students to complete an end of year formal exam.	1,2,3,4,5	50.00	End-of-Semester

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



