

MODULE SPECIFICATION FORM

Module Title: Soils and the Rooting Environment	Level: 4	Credit Value: 20
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Module code: LND413	Cost Centre: GAAN	JACS3 code: D750
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Trimester(s) in which to be offered: 1	With effect from: September 2013
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Office use only: To be completed by AQSU:	Date approved: August 2013 Date revised: - Version no: 1
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Existing/New: New	Title of module being replaced (if any):
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Originating Academic Department: Biology and Environment	Module Leader: D Skydmore
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Module duration (total hours): 200	Status: core/option/elective Core (identify programme where appropriate):
Scheduled learning & teaching hours: 50	
Independent study hours: 150	
Placement hours	

Programme(s) in which to be offered: FdSc Rural Business BSc (Hons) Wildlife and Plant Biology	Pre-requisites per programme (between levels): None
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Module Aims: The module aims to introduce the student to soil structure, its physical and chemical structures, soil eco systems – species, trophic levels, and the concepts of assessing soil

quality, structure and fertility.

Further, the module aims to enable the student to apply the concepts of soil science and ecology to plant growth and development, together with the necessary skills of evaluation and practical soil management skills.

Expected Learning Outcomes:

At the end of this module, students will be able to:

Knowledge and Understanding:

1. Plan farm management systems to enhance soil quality and condition
2. Understand soil physical structure and its management
3. Describe soil chemistry, fertility and its manipulation

Transferable/Key Skills and other attributes:

- Oral, written and visual communication.
- Interpersonal skills of effective listening, negotiating, persuasion and presentation
- Information gathering , evaluation and application

Assessment: please indicate the type(s) of assessment (e.g. examination, oral, coursework, project) and the weighting of each (%). ***Details of indicative assessment tasks must be included.***

The students will carry out two elements of coursework. The first task will be an assessed practical, and report on soil water relations and quality and the second an essay on nutrient cycling. There will be a combination of formative activities that encourage students to evaluate their learning and apply it in context.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (eg, if exam or presentation)	Word count (or equivalent if appropriate)
1	1,2	Practical	40%		1000
2	3	Essay	60%		2000

Learning and Teaching Strategies:

Lectures will form the principal means of delivery of theoretical elements of the module and for delivery of key concepts in the course. Discussions and practical assignments will be used as appropriate to involve students in appraisal of ideas and the application of theory in practical contexts. Formative support provided in tutorials provides guidance and feedback on assignment tasks and activities.

Private directed study will consolidate learning and undertake research for assessments. The focus of study is on wider reading to develop and reinforce knowledge and understanding of the topics and material covered in lectures and preparation for tutorials. This will also help students to develop time management skills, library and research skills and critical thinking.

Throughout the module delivery the tutor will draw to the student's attention various industrial web sites and other information available via the VLE, as are a number of additional sources of support and information.

Syllabus outline:

Farm management methods of enhancing soil conditions
Use of green manures, cover crop, under-sowing and alleopathic effects of crops
Soil structure, soil profiles and classification
Controlled traffic farming
Soil composition – inorganic and organic components
Nutrient cycles; nitrogen sensitive zones
Nutrient exchange, reactions at surfaces, and crop requirements
Effects of fertility on yields or stock health
Soil hydrologic cycle
Soil water relations
Assessing water requirements
Water storage, extraction and Irrigation methods
Drainage and water management; Trees and farm management
Soil microbiology,
Soil ecosystems and trophic levels
Decomposition cycles

Bibliography:**Essential reading:**

Adams, C., Bamford, K. and Early, M.P. (2012), *Principles of Horticulture*. Oxford: Butterworth Heinemann.

Havlin, J.L., Tisdale, S., Nelson, W. and Beaton, J.D. (2005), *Soil fertility and fertilisers: An introduction to nutrient management*. 7th ed. New Jersey: Pearson.

White, R.E. (2009), *Principles and practice of soil science: the soil as a natural resource*. 4th ed. Oxford: Wiley Blackwell

Wall, D., Bargett, R., Behan-Pelletier, V., Herrick, J., Jones, H., Ritz, K., Six, J., Strong, D. and van der Putten, W. (eds) (2012), *Soil Ecology and Ecosystem Services*. USA: OUP. [

Other indicative reading:

Balfour, E. (2006), *The Living Soil*. London: Bristol: Soil Association Ltd.

Begon, M., Townsend, C.A. and Harper, J.L. (2009), *Ecology: from individuals to ecosystems*. 4th ed. New York: Wiley-Blackwell

Coleman, D.C., Crossley, D.A. & Hendrix, P.F. (2004), *Fundamentals of soil ecology*. 2nd ed., Oxford: Academic Press

Follis, A. (ed.) (2002), *Woodlands; a practical handbook*. Doncaster: BTCV

Booklets

Woodland trust: (2011), *Trees for farms in Wales*
Planting trees to protect water.

Journals

European Journal of Soil Science, Chichester: Wiley-Blackwell

"The Horticulturist" Enfield: Institute of Horticulture