

MODULE DESCRIPTOR

MODULE TITLE	Essential Soil Science		
MODULE CODE	MR1207	CREDIT VALUE	10
MODULE DELIVERY	Semester		
MODULE TUTOR	Colin Stanfield		
DATE APPROVED	April 2008	VERSION NUMBER	1
DEPARTMENT	School of Built & Natural Environment	PARTNER INSTITUTION	Myerscough College

RELATIONSHIP WITH OTHER MODULES

Co-requisites	None	Pre-requisites	None	Excluded Combinations	None
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MODULE AIMS

This module aims to explore principles of soil science with specific focus on the relationship between soil properties and plant growth and development. The module will examine the significance of the soil as a finite resource and appreciate its' role in the global ecosystem.

Practical and analytical skills associated with methodical laboratory practice will be developed, allied with personal time management and teamwork to produce a considered and informed technical report.

The module provides the underpinning knowledge and understanding of soil science, sufficient for students who do not progress to the further study of soil science, to be able to recognise soil properties (in both soil samples and in the field) and their influence on plant growth and development.

In addition the module supports those students who progress to further study of the soil either as a distinct module (Applied soil technology) or embedded within other modules.

MODULE CONTENT

- 1 Soil components**
 - 1.1 Texture
 - 1.2 Formation and the development of soil structure
- 2 Soil chemistry**
 - 2.1 pH
 - 2.2 Nutrient exchange
- 3 Soil air and water relationships**
 - 3.1 The soil biosphere and the soil as a carbon source / sink in relation to the global ecosystem
- 4 Soil classification**
 - 4.1 The soil as a finite resource and an introduction to sustainable approaches to soil management

LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1	Describe the biotic and abiotic components and processes of the soil and discuss their influence on plant growth and development
2	Recognise the characteristics of the major United Kingdom soil groups and describe the environmental factors which determine soil formation, development and properties
3	Recognise the soil as a valuable yet finite resource, its' role in the global ecosystem and discuss approaches to sustainable soil management
4	Conduct laboratory investigations into key soil properties and to produce a coherent and informed technical report which discusses and evaluates the characteristics of the soil at a selected site

TEACHING AND LEARNING STRATEGY

The module will be delivered either by means of a series of lectures supported by laboratory practicals and demonstrations, or (for On Line/Distance Learning students) formatted as a sequenced series of learning sessions including PowerPoint presentations, packaged files, articles for further reading and learning activities.

Formal lectures will be supported by prepared material.

Laboratory practicals will be supported by a structured practical file. Whilst laboratory practical time is allocated, students will be required to undertake additional laboratory practical work to supplement this time. Such additional work, where fully verified, will count towards a final module grade.

Students will be required to seek out additional information from the College library and other relevant sources. Such information must be applied to specific examples related to the students' area of interest vis a vis their Degree award title. Additional reading, research and independent learning is essential for success in this module and all students will be guided by the module tutor in respect of effective independent learning.

There will also be a number of personal tutorial sessions available to provide an opportunity for discussion on matters relating to the module with the module tutor.

For On-line delivery a number of self-tests are provided to assist students to monitor their progress and depth of understanding. Students are empowered to participate in on-line discussion forums and tutorials through the virtual learning environment – Myerscough On Line Learning Network (MOLLNET) – and by direct access to the module tutor by e-mail and telephone.

INDICATIVE CLASS CONTACT

1 hour lecture per week (12 weeks x 1 hour) plus **either** a 2 hour practical (6 weeks x 2 hours) **or** 1 hour workshop/seminar per week (6 weeks x 1 hour).

For on-line distance learning, module tutor time equivalent to 2 hours per week for one semester is allocated to support students. On-line students also have 24 hour access to a wide range of on-line learning materials and learning activities.

INDICATIVE ASSESSMENT

Number of Assignments	Assessment	Weighting %	Type/Duration/ Wordcount (indicative only)	Learning Outcomes being assessed
1	Soil site report and laboratory practical file	60%	1500	1, 3 and 4
1	End of module exam	40%	1 hour	1, 2 and 3

MODULE PASS REQUIREMENTS

For successful completion of the module, each individual element of assessment must be passed at 40%.

BIBLIOGRAPHY AND LEARNING SUPPORT MATERIAL

- Adams, W. A. and Gibbs, R. J. (1994) *Natural Turf for Sport and Amenity Science and Practice*, CAB International
- Ashman, M.R. & Puri, G. (2002) *Essential Soil Science*. Blackwell Science
- Biddle, P. G. (1998) *Tree Root Damage to Buildings Vol 1 and 2*, Witton Mead
- Buckman, H. D. Brady, N. C. & Weil, R. R. (1996) *The Nature and Properties of Soils*, Prentice Hall
- Bunt, A. C. (1988) *Media and Mulches for Container Grown Plants*, Allan and Unwin
- Brady, N.C. (2001) *The Nature and Properties of Soils (13th Ed'.)* Prentice Hall
- Brady, N.C. (2003) *Elements of the Nature and Properties of Soils*. Prentice Hall
- Coleman, D. C. and Crossley, D. A. (1996) *Fundamentals of Soil Ecology*, Academic Press.
- Courtney, F. M. & Trudgill, S. T. (1993) *The Soil: An Introduction to Soil Study*, Hodder & Stoughton
- Foth, H. D. (1990) (8th edition) *Fundamentals of Soils Science*, J Wiley and Sons
- Hillel, D. (2007) *Soil in the environment*. Academic
- Russell, E. W. (1988) *Soil Conditions for Plant Growth*, Longmans
- Wild, A. (1995) *Soils and the Environment (An Introduction)*. Cambridge University Press
- Sumner, M.E. (2000) *Handbook of Soil Science*. CRC Press Boca Raton FL
- White, R.E. (2005) *Principles & Practice of Soil Science. The Soil as a Natural Resource (4th Ed'.)* Blackwell Science

JOURNALS

- The European Journal of Soil Science
The Journal of the Sportsturf Research Institute
The Journal of Arboricultural Science
The Journal of Horticultural Science

ELECTRONIC INFORMATION SOURCES

- <http://www.soils.org.uk/>
<http://www.pedosphere.com/textbook.html>
<http://www.soils.org/>
<http://www.aie.org.uk/>
<http://www.soil-net.com/>
<http://www.pitchcare.com/>
<http://www.pedosphere.com/>
<http://www.silsoe.cranfield.ac.uk/nsri/>
<http://www.soil-net.com/>