

# HR902-10 Soil Sustainability and the Environment

**26/27**

**Department**

Life Sciences

**Level**

Taught Postgraduate Level

**Module leader**

Sarah Cook

**Credit value**

10

**Module duration**

2 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

This module focuses on providing the students with an understanding of the environmental and safety risks associated with technology together with methods for limiting damage and risk. Reference to practical examples will be used wherever possible.

[Module web page](#)

### Module aims

1. Understand the principles of soil science and soil management
2. Understand the fundamental concepts of resource management for agriculture, landscape and conservation
3. Evaluate the use of water, nutrients and other natural resources on agricultural regimes as well as their impacts on the wider environment
4. Analyse the sources and effects of environmental pollution
5. Select and apply appropriate tools and techniques to optimise cropping and limit and manage pollution

## Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Soil genesis, structure and classification
2. Assessing soil quality and ecosystem services
3. Soil carbon cycling
4. Soil biota and above-below ground food webs
5. Soil carbon and climate change
6. Management of soil carbon
7. Plant elemental nutrition and acquisition
8. Soil nitrogen and phosphorus cycling and pollution
9. Soil degradation and desertification
10. Soil water and cropping
11. Sustainable soil management
12. Soil pollution
13. Compost and waste application to land
14. Public understanding of soil science

## Learning outcomes

By the end of the module, students should be able to:

- Understand the processes and timescales governing soil formation
- Understand the role of soil processes in regulating the global carbon, nitrogen and phosphorus cycles
- Critically evaluate approaches to define, assess and quantify soil quality
- Understand the role of soils in supporting agricultural productivity and the principles of sustainable agricultural soil management
- Have a critical awareness of environmental problems arising from unsustainable soil management practices
- Understand the key chemical and biological pollutants which affect soil and critically evaluate implications for human health
- Understand the principles of composting, approaches to evaluate compost characteristics, and regulations surrounding the application of organic materials to land
- Understand and challenge public perceptions of soils and their role in delivering ecosystem services

## Indicative reading list

[Reading lists can be found in Talis](#)

[Specific reading list for the module](#)

## Subject specific skills

Understand the processes and timescales governing soil formation  
Understand the role of soil processes in regulating the global carbon, nitrogen and phosphorus cycles  
Critically evaluate approaches to define, assess and quantify soil quality  
Understand the role of soils in supporting agricultural productivity and the principles of sustainable agricultural soil management  
Have a critical awareness of environmental problems arising from unsustainable soil management practices  
Understand the key chemical and biological pollutants which affect soil and critically evaluate implications for human health  
Understand the principles of composting, approaches to evaluate compost characteristics, and regulations surrounding the application of organic materials to land

## **Transferable skills**

Understand and challenge public perceptions

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## **Study**

### **Study time**

| <b>Type</b>                  | <b>Required</b>             |
|------------------------------|-----------------------------|
| Lectures                     | 14 sessions of 1 hour (19%) |
| Seminars                     | 1 session of 2 hours (3%)   |
| Practical classes            | (0%)                        |
| Supervised practical classes | 1 session of 2 hours (3%)   |
| Fieldwork                    | 1 session of 3 hours (4%)   |
| Private study                | 54 hours (72%)              |
| Total                        | 75 hours                    |

### **Private study description**

Independent research

### **Costs**

No further costs have been identified for this module.

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### **Assessment**

You do not need to pass all assessment components to pass the module.

## Assessment group A5

|   | <b>Weighting</b> | <b>Study time</b> | <b>Eligible for self-certification</b> |
|---|------------------|-------------------|--|
| <b>Assessment component</b>   |                  |                   |  |
| Data analysis and interpretation exercise   | 100%             | 25 hours          | Yes (extension)                        |
| Students will be given a data set relating to ecosystem services provided by soil eg carbon storage. They will be asked to 1. identify a number of specific research questions relating to the data. 2. use the data to address these questions, presenting their data analysis in a suitable format and with appropriate statistical analysis. 3. evaluate this evidence in the context of the wider literature 4. identify specific areas for future study including consideration of methods and experimental approaches which could be used |                  |                   |  |

Reassessment component is the same

## Feedback on assessment

Written individual feedback to each student on essay and seminar assessments. Face-to-face feedback on any assessment provided on request from the student.

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## Availability

### Courses

This module is Core for:

- Year 1 of THRA-D4A1 Postgraduate Taught Environmental Bioscience in a Changing Climate
- THRA-D4A3 Postgraduate Taught Food Security
  - Year 1 of D4A3 Food Security
  - Year 1 of D4A3 Food Security
- Year 1 of THRA-D4A2 Postgraduate Taught Sustainable Crop Production: Agronomy for the 21st Century

This module is Core optional for:

- Year 2 of THRA-D4A3 Postgraduate Taught Food Security

This module is Optional for:

- Year 1 of ULFA-C1A1 Undergraduate Biological Sciences (MBio)