

# EART 2004 SOILS AND SUBSTRATES

**Credit Points** 10

**Coordinator** Jason Reynolds ([https://directory.westernsydney.edu.au/search/name/Jason Reynolds/](https://directory.westernsydney.edu.au/search/name/Jason%20Reynolds/))

**Description** This subject provides you with a basic understanding of soil formation and erosion processes, soil physical, chemical and biological properties, and the diversity and classification of soils in the Australian landscape. These basic principles, along with alternative substrates, are explored in relation to the sustainable management of soils and substrates for horticultural and agricultural production and for environmental management and other land uses. The practical sessions are designed to reinforce the lecture material and include field description and analysis of soil profiles and properties, soil sampling principles and practice, laboratory measurement of soil and substrate physical and chemical properties essential/important for plant growth, soil/substrate biology.

**School** Science

**Discipline** Soil Science

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 2 subject

## Restrictions

Successful completion of 60 credit points

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe soil and substrate properties and link their importance in the management for sustainable plant production
2. Design appropriate soil and substrate sampling protocols for use in professional and applied contexts
3. Perform basic field and laboratory tests of key soil and substrate physical and chemical properties for plant production and forensic evidence
4. Evaluate the significance of test results for plant production, accessing relevant published information to aid in interpretation
5. Develop information literacy and written communication skills through accessing, evaluating and integrating information from research journals in an essay on a soils topic of the students choice

## Subject Content

1. Classification of Australian soils and their histories.
2. Soil and substrate chemical & physical properties and their application.
3. Functions of soil and substrate in biology and ecology.
4. Managing soil and substrate fertility for environmental and agricultural improvement
5. Regenerative approaches to improve soil and substrate fertility
6. Carbon farming and data driven systems management.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are

regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Practical Exam	2 hours	30	N	Individual	N
Presentatio	15 minutes	30	N	Individual	N
Quiz	1 hour	20	N	Individual	N
Report	1,000 words	20	N	Individual	N

## Prescribed Texts

- Raymond R. Weil and Nyle C. Brady, The Nature and Properties of Soils, Global Edition eBook(<https://www.pearson.com.au/9781292162249>)

## Teaching Periods

### Autumn (2025)

#### Hawkesbury

#### On-site

**Subject Contact** Jason Reynolds ([https://directory.westernsydney.edu.au/search/name/Jason Reynolds/](https://directory.westernsydney.edu.au/search/name/Jason%20Reynolds/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=EART2004\\_25-AUT\\_HW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=EART2004_25-AUT_HW_1#subjects))