



# ENVS7498

## Environmental Remediation

Session 2, Weekday attendance, North Ryde 2021

*Archive (Pre-2022) - Department of Earth and Environmental Sciences*

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#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

#### Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of [units with mandatory on-campus classes/teaching activities](#).

Visit the [MQ COVID-19 information page](#) for more detail.

## General Information

Unit convenor and teaching staff

Vladimir Strezov

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Credit points

10

Prerequisites

Admission to MRes

Corequisites

Co-badged status

ENV58498

Unit description

This interdisciplinary unit aims to develop an understanding of the impacts of human activities on the environment and the actions that can be undertaken to remediate, rehabilitate or restore degraded environments. It includes interactive classes, field-based learning and engagement activities to enable students to build their knowledge of the causes, impacts and remediation of environmental degradation. Students will then put knowledge into practice by developing a comprehensive remediation and rehabilitation report for a contaminated site.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** demonstrate knowledge of the current remediation technologies from a management point of view to be able to develop strategies for cleaning up of contaminated sites

**ULO2:** evaluate the emerging developments in environmental remediation and critically assess their commercial readiness to overcome technological limitations in real life scenarios

**ULO3:** apply field and laboratory methods for sample collection and analysis of pollutants to assess the state of pollution of contaminated site

**ULO4:** analyse, interpret and apply data for environmental risk evaluation of contaminated sites in a design of remediation programs for effective management

**ULO5:** work independently and in a team to assess complex environmental problems and propose technological solutions for remediation

**ULO6:** communicate the science and management of environmental remediation in verbal and written formats to inform specialist audience of the state of a problem and remediation best practice options

## General Assessment Information

### Assessment Criteria

Assessment at Macquarie University is standards-based, as outlined in the [Assessment Policy](#). This means that your work will be assessed against clear criteria, and these criteria (e.g. in a rubric) will be made available when the assessment tasks are released to you on iLearn.

### Submission of Assessments

All assessments must be submitted online through [Turnitin](#) unless otherwise indicated. Links for the submission of each assessment will be available on [iLearn](#).

You should always check that you have uploaded the correct file. If you have a problem, please email the Unit Convenor with your correct file. You must also keep a copy of your assessments until the end of semester in case there is a problem with your submission. It is your responsibility to ensure that you can provide a copy of your assessment if requested.

### Marking of Assessments

Assignments will usually be marked through Turnitin with grades provided through Gradebook on iLearn. Please do not submit your assessments via email or in hard copy unless requested (e.g. a sketch or drawing).

We aim to return your assessment grades and feedback within two to three weeks of the date that you submitted it. We appreciate your patience and will advise you through iLearn when your marked assessments and feedback are available for viewing.

### Penalties for Late Assessments

The penalty for late submission of assessments in this unit is **ten percent (10 %) of the assessment value per day**, calculated from the due time and date. This means that if the assignment is worth a total of 30 marks (or 30 % of the unit) you will lose 3 marks for each day it is late. This is a hefty penalty designed to make you aware of the importance of organising yourself around assessment due dates. The penalty will be applied over weekdays and weekends unless you have been granted an extension prior to the due date.

### Extensions for Assessments

To obtain an extension for an assessment task, you will need to follow the formal process as outlined in the [Special Consideration Policy](#), and you must provide appropriate supporting

evidence (e.g. medical certificate - see advice for [Special Consideration](#) requests). The final decision regarding the granting of an extension lies with the unit convenor. Permission for extensions must be sought **before the due date** unless there are exceptional circumstances. Please let us know of problems in advance or as soon as possible, not after the event. We are likely to be much more sympathetic and able to accommodate your circumstance if you follow this advice.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Case study</a>	20%	No	Week 6
<a href="#">Quiz</a>	20%	No	Week 8
<a href="#">Presentation</a>	20%	No	Weeks 9 and 10
<a href="#">Project</a>	40%	No	Week 13

### Case study

Assessment Type [1](#): Case study/analysis

Indicative Time on Task [2](#): 15 hours

Due: **Week 6**

Weighting: **20%**

Case study of urban runoff contamination remediation design

On successful completion you will be able to:

- demonstrate knowledge of the current remediation technologies from a management point of view to be able to develop strategies for cleaning up of contaminated sites
- communicate the science and management of environmental remediation in verbal and written formats to inform specialist audience of the state of a problem and remediation best practice options

### Quiz

Assessment Type [1](#): Quiz/Test

Indicative Time on Task [2](#): 15 hours

Due: **Week 8**

Weighting: **20%**

The quizzes will test knowledge and may be online or in-class. See iLearn for a detailed list of quizzes in this unit.

On successful completion you will be able to:

- demonstrate knowledge of the current remediation technologies from a management point of view to be able to develop strategies for cleaning up of contaminated sites
- analyse, interpret and apply data for environmental risk evaluation of contaminated sites in a design of remediation programs for effective management

## Presentation

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **Weeks 9 and 10**

Weighting: **20%**

Presentation of research inquiry of a selected emerging environmental remediation technology

On successful completion you will be able to:

- demonstrate knowledge of the current remediation technologies from a management point of view to be able to develop strategies for cleaning up of contaminated sites
- evaluate the emerging developments in environmental remediation and critically assess their commercial readiness to overcome technological limitations in real life scenarios
- communicate the science and management of environmental remediation in verbal and written formats to inform specialist audience of the state of a problem and remediation best practice options

## Project

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Week 13**

Weighting: **40%**

Assessment of contaminants in contaminated soil and design of effective remediation program

On successful completion you will be able to:

- demonstrate knowledge of the current remediation technologies from a management point of view to be able to develop strategies for cleaning up of contaminated sites
- apply field and laboratory methods for sample collection and analysis of pollutants to assess the state of pollution of contaminated site
- analyse, interpret and apply data for environmental risk evaluation of contaminated sites in a design of remediation programs for effective management
- work independently and in a team to assess complex environmental problems and propose technological solutions for remediation
- communicate the science and management of environmental remediation in verbal and written formats to inform specialist audience of the state of a problem and remediation best practice options

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<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

### Unit iLearn

This unit has an iLearn page that can be accessed through [ilearn.mq.edu.au](http://ilearn.mq.edu.au). It contains important information and other materials relating to the unit, including details and links for assessments.

### Communication

The unit iLearn is the primary way that we communicate with you. Please check it regularly for announcements and posts. You are encouraged to use the Discussion Board on iLearn to post questions and generate discussion with other students. Please only email the convenor with private matters – all other questions should be posted on iLearn.

### Unit Organisation

This unit is delivered in **(modules/weekly topics)**. The organisation of these is outlined in a detailed unit schedule which is available on [iLearn](#).

### Classes

The class timetable for this unit can be found through the [Timetable](#) portal. You should also check the unit schedule as some weeks may have other instructions or locations.

## Workload

The expected workload for this 10-credit point unit is 150 hours of activity, comprising 72 hours on learning activities and 78 hours on assessment tasks.

## Requirements to complete this unit satisfactorily

To complete this unit satisfactorily, you must:

1. Participate in all scheduled classes;
2. Complete all assessments; and
3. Achieve a pass grade or higher.

The descriptions for grades common to all coursework units offered by Macquarie University are outlined in [Schedule 1 of the Assessment Policy](#).

## Recommended Texts and/or Materials

P. Nathanail and R.P. Bardos, Reclamation of contaminated land, John Wiley & Sons, Chichester UK, 2004.

M. van der Perk, Soil and water contamination, Taylor & Francis, London UK, 2006.

T. Carney and D.M. Hobson, Contaminated land, E&FN Spon, New York USA, 1998.

P.B. Bedient, H.S. Rifai and C.J. Newell, Ground water contamination, PTR Prentice-Hall, New Jersey USA, 1994.

I. Mirsal, Soil Pollution Origin, Monitoring & Remediation, Springer, 2008.

D.D. Reible, Fundamentals of Environmental Engineering, CRC Press, Boca Roca USA, 2000.

N.K. Shamas and L.K. Wang, Water Engineering: Hydraulics, Distribution and Treatment, Wiley & Sons, Chichester UK, 2015.

US EPA, How To Evaluate Alternative Cleanup Technologies For Underground Storage Tank Sites, 2017.

US EPA, Guidelines for Human Exposure Assessment, 2019.

NSW EPA, Managing Urban Stormwater: Treatment Techniques, Sydney 1997.

NSW EPA, Waste Classification Guidelines Part 1: Classifying waste, Sydney, 2014.

A.T Yeung, Remediation Technologies for Contaminated Sites, in book Advances in Environmental Geotechnics pp 328-369, 2009.

Schoonover and Crim, An Introduction to Soil Concepts and the Role of Soils in Watershed Management, Journal of Contemporary Water Research & Education, 154, 21, 2015.

C. Reimann and P. de Caritat, Establishing geochemical background variation and threshold values for 59 elements in Australian surface soil, Science of the Total Environment, 578, 633, 2017

A. Jankaite and S. Vasarevicius, Remediation technologies for soils contaminated with heavy metals, Journal of Environmental Engineering and Landscape Management, 2005.

## Technology Used and Required

This unit will use iLearn and Echo360. See the [Instructions on how to log in to iLearn](#) and the [iLearn quick guides for students](#) which will help you:

- [Getting started](#) - Find out how to navigate and familiarise yourself with the iLearn environment
- [Activities](#) - Learn how to effectively complete the activities required of you in iLearn
- [Assignments and Gradebook](#) - Find out how to submit assessments and view your grades using iLearn
- [Online study tips](#) - Studying online is a unique experience, learn how to navigate it here
- [Discussion forums](#) - Explore the different types, and features of discussion forums in iLearn
- [Lecture recordings](#) - Find out how to access lectures online, as well as the features available to you

## Unit Schedule

### Unit Schedule

The unit schedule and content will be discussed in detail in Week 1 of the semester and through iLearn. A combined face to face and on-line delivery will be offered in this unit.

### Fieldtrips

A whole day fieldtrip is scheduled for week 5 of the semester. The fieldtrip will consist of visits to wastewater treatment plant managed by Sydney Water and surface water treatment trains managed by local city councils. A virtual fieldtrip will be provided to students located outside of Sydney, and/or students affected by the COVID outbreak. An additional, self-managed fieldtrip will be facilitated in Weeks 10 and 11 of the semester for soil sample collection, which will then be used for practical analysis in the laboratory. External students will be accommodated for this practical class through on-line mode of delivery.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)



- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.