ENVS8498

Environmental Remediation

Session 2, In person-scheduled-weekday, North Ryde 2023

School of Natural Sciences

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
Admission to MEnv or MSc or GradDipEnv or GradCertEnv or MEnvPlan or MPlan or MSusDev or GradDipSusDev or GradCertSusDev or MMarScMgt or MConsBiol or GradDipConsBiol or MEngEnvSafetyEng or MScInnovationEnvSc

Corequisites

Co-badged status
ENVS7498

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: develop understanding for application of field and laboratory methods for sample collection and analysis of pollutants to assess the state of pollution of contaminated site
ULO4: 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 and management 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. To pass the unit, you must achieve a total mark equal to or greater than 50%.

Submission of Assessments

All assessments, except for the quizzes, must be submitted online through Turnitin unless otherwise indicated. Links for the submission of each assessment will be available on iLearn. The quizzes will be conducted through 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.

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at **11:55 pm**. A 1-hour grace period is provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/

presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

Assessment Tasks

Name	Weighting	Hurdle	Due
Report	20%	No	8/09/23
Project	40%	No	6/11/23
Quiz	20%	No	29/09/23
Presentation	20%	No	3/10/23

Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **8/09/23**
Weighting: **20%**

Report on 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

Project

Assessment Type [1]: Project
Indicative Time on Task [2]: 25 hours
Due: **6/11/23**
Weighting: **40%**

Design of remediation program for a case study of contaminated site

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
- develop understanding for application of field and laboratory methods for sample collection and analysis of pollutants to assess the state of pollution of contaminated site
- 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 and management 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

Quiz

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 15 hours
Due: **29/09/23**
Weighting: **20%**

The quiz will test knowledge and may be online or in-class.

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
- interpret and apply data for environmental risk evaluation of contaminated sites in a design of remediation programs for effective management

Presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 15 hours
Due: **3/10/23**
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

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[1] 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.

[2] 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. It contains important information and other materials relating to the unit, including details and links for assessments.

Communication

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email 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.

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 Spoon, 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. Shammas 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.

J.E. Schoonover and J.F. 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.

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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
- Assessment Procedure
- Complaints Resolution 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). 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) 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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

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

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the 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

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit 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.

Changes since First Published

Date	Description
17/07/2023	Assignment 1 due date changed to 8 September 2023.