



ENVS829

Pollution Control and Waste Management

S2 Evening 2017

Dept of Environmental Sciences

Contents

| | |
|---|----|
| <u>General Information</u> | 2 |
| <u>Learning Outcomes</u> | 2 |
| <u>General Assessment Information</u> | 3 |
| <u>Assessment Tasks</u> | 6 |
| <u>Delivery and Resources</u> | 8 |
| <u>Unit Schedule</u> | 10 |
| <u>Policies and Procedures</u> | 11 |
| <u>Graduate Capabilities</u> | 12 |
| <u>Changes from Previous Offering</u> | 16 |

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General Information

Unit convenor and teaching staff

Senior Lecturer

Scott Wilson

scott.p.wilson@mq.edu.au

Contact via 9850 8419

12 Wally's Walk Room 438

By appointment

Credit points

4

Prerequisites

Admission to MEnv or MSc or GradDipEnv or GradCertEnv or MEnvPlan or MPlan or MConsBiol or MPH

Corequisites

Co-badged status

Unit description

This unit examines scientific and engineering principles in managing waste, the industrial control of pollutant emissions, and options for cleaner industrial production. The unit introduces students to industrial environmental practices, industrial ecology and industrial environmental quality control.

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:

1. Understand the basic scientific and technical principles involved in pollution control and waste management.
2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
3. Knowledge of essential regulatory requirements for pollution control, remediation and

waste management.

5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

General Assessment Information

Assessment submission

This unit uses electronic submission and marking. The required format and mode of submission is as follows. Note: there is no requirement to submit hard copies unless requested. Further details on how to use Turnitin will be provided separately.

| Assessment Submission | Format |
|-----------------------------|---|
| Reports 1 & 2 | The Individual Report must be submitted through Turnitin (See iLearn site for the relevant Assessment link). |
| Group scenario presentation | Each group must submit an electronic copy of their presentation to the teaching staff on the day of the presentation. |

General assessment criteria

The general assessment criteria that is used to examine the overall attainment of knowledge, skills and abilities includes the following, where the level of achievement is expected to be at the standard of a post-graduate student in each of the criteria. GradeMark Rubrics will be used to mark and grade field trip reports.

| General Assessment Criteria | Expectation of achievement at the post-graduate level |
|---|---|
| <ul style="list-style-type: none"> Addressing the task that is specified (or answering the question that is asked) for each assessment, including staying within the word limit unless otherwise specified. | <ul style="list-style-type: none"> Students are able to complete the assessments as instructed. |
| <ul style="list-style-type: none"> Demonstration of knowledge and research skills through written material and verbal presentations. | <ul style="list-style-type: none"> Students have engaged in the subject matter and task. Students can show understanding of the topic through an analysis and well-developed discussion of the topic. |
| <ul style="list-style-type: none"> Demonstration of independent thinking through written material and verbal presentations. | <ul style="list-style-type: none"> Students are able to demonstrate in-depth thinking through discussion that places the topic in the broader context. Students are able to demonstrate initiative and independent contributions through new ideas. |

| | |
|---|---|
| <ul style="list-style-type: none"> • Appropriate use and citation of relevant literature, including scientific research papers and reports. Citation of references within the text and reference list is correct and consistent, with no abbreviations. | <ul style="list-style-type: none"> • Students will undertake literature searches and demonstrate appropriate selection of relevant articles in support of their arguments. |
| <ul style="list-style-type: none"> • Demonstration of good planning with a clear structure, headings, and a logical argument based firmly on the literature cited. | <ul style="list-style-type: none"> • Students are able to structure written (and verbal) work to convey ideas clearly and logically. |
| <ul style="list-style-type: none"> • Presentation of legible work with: correct grammar and spelling, correct use of professional terminology as appropriate, and correct use of SI units, abbreviations and acronyms. | <ul style="list-style-type: none"> • Students will submit work that is presented in a professional manner. |
| <ul style="list-style-type: none"> • Figures, tables and other supporting information are legible and necessary, with reference to these in the text. Full and appropriate captions are included on each as well as the source where relevant. | <ul style="list-style-type: none"> • Students are able to use figures and tables to summarise or present information and data effectively. |
| <ul style="list-style-type: none"> • Effective communication of research outcomes. | <ul style="list-style-type: none"> • Students are able to get their message across clearly and concisely. |

Penalties for late assessments and extension requests

All assessments must be completed and submitted, on time and in full, in order to receive a minimum pass grade.

Penalties for late written assessments will be a minimum of 10% per day (including weekend days) or part thereof. These deadlines and penalties **will** be imposed. Allowing some students to hand assessments in late is unfair to those who meet the deadlines.

The deadlines for assessments are not negotiable except in the circumstances outlined below. Please take note of the DAYS at which work is due and let the Convenor know of problems in advance or as soon as possible, not after the event: they are likely to be much more sympathetic and flexible if you follow this advice.

The University has a Disruption to Studies Policy, which can be accessed here: http://mq.edu.au/policy/docs/disruption_studies/policy.html

In accordance with the Policy, students that experience a disruption to studies which is serious, unavoidable and greater than 3 days as per the Policy guidelines, **and** wish to request an assessment extension on these grounds, must submit a formal application for special consideration to the Science Faculty. <http://science.mq.edu.au/current-students/postgraduate-students/>

If a student experiences a disruption to studies that is unavoidable, but not serious and is of 3 days or less in duration, they can apply for special consideration to the convenor under the following conditions:

- Personal illness or illness of a child – If an assessment is submitted after the due date, a medical certificate or a letter with appropriate supporting documents outlining the extenuating circumstances must be provided that covers the day that the assessment was due, and/or the days preceding.
- Work commitments - Work commitments will not be viewed as grounds for an extension unless your work commitment requires you to be away from home for at least 1 overnight or requires you to be at work for longer than 12 hours per day, e.g. field work or inter-state meetings.
- Other family commitments or emergencies - If you have other commitments that take you away from study you should plan for these in advance as part of an effective individual study plan. Extensions will only be considered if your ability to submit an assessment on time was caused by an unexpected event where you can demonstrate: that the event was not foreseeable or predictable **and** that the event substantially impacted upon your ability to complete the Assessment Task **and** that there was alternative option available.

The number of days of disruption and the timing of disruption will be taken into considered in determining whether special consideration should be granted or not. The ultimate grounds for the decision will be whether the disruption was unavoidable and fairness with respect to other students.

Requirements to Complete this Unit Successfully

Attendance and assessment submission

In order to successfully complete this unit and receive a minimum Pass grade, students should:

1. Attend all lecture/tutorial sessions;
2. Attend and participate in all field trips;
3. Submit all assessments;
4. Meet the minimum level of achievement expected of a postgraduate student, as outlined in the General Assessment Criteria.

Unit Rubric

In ENV5829, it is expected that your assessments will be very high quality and demonstrate comprehension of course content including knowledge, skills and abilities which are at the standard of a postgraduate level. Grades for the unit as a whole will be awarded according to the following rubric.

| | Developing | Functional | Proficient | Advanced |
|--|------------|------------|------------|----------|
|--|------------|------------|------------|----------|

| | | | | |
|--|---|---|--|---|
| <p>General description of the level of attainment</p> | <p>Has not yet reached the desired standard in the general assessment criteria. Shows no or limited understanding of required concepts, and no or limited skills and abilities.</p> <p>A fail grade (or under some circumstances, a conceded pass) would be given.</p> | <p>Has reached the basic academic standards in the general assessment criteria. Shows a basic understanding of required concepts, and basic skills and abilities. Needs considerable support and guidance.</p> <p>A pass grade would be awarded.</p> | <p>Has reached the standards expected. Can work independently with some guidance.</p> <p>A credit grade would be awarded.</p> | <p>Has gone beyond the expected standards. Exhibits high levels of independence and can use initiative to generate new ways of completing tasks. Demonstrates high level professional capabilities.</p> <p>A grade of distinction or high distinction would be awarded.</p> |
|--|---|---|--|---|

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|---|-----------|--------|--------------------|
| <u>Orica Site Assessment</u> | 20% | No | Week 6 08/09/2017 |
| <u>Litter and Recycling Audit</u> | 50% | No | Week 9 13/10/2017 |
| <u>Scenario Presentaion</u> | 30% | No | Week 13 08/11/2017 |

Orica Site Assessment

Due: **Week 6 08/09/2017**

Weighting: **20%**

This assessment task will be based of Field Trip 1 to the Orica Botany site to examine contaminated land issues and remediation measures. The task is to write an individual report (maximum 2000 words) based on the air, land and groundwater contamination issues at the Orica Botany site. The report should include pollution control mechanisms used, environmental monitoring conducted and remediation measures applied. This will be primarily a literature based report and include an evaluation of the pros and cons of the techniques and processes used and any recommendations for improved practices/measures should also be discussed. All literature used should be cited accordingly both in the text and in a reference list at the end of the report. Further details will be provided on the Unit's iLearn site.

On successful completion you will be able to:

- 1. Understand the basic scientific and technical principles involved in pollution control and waste management.
- 2. Apply this understanding of pollution control techniques and waste management

strategies to relevant real world scenarios.

- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Litter and Recycling Audit

Due: **Week 9 13/10/2017**

Weighting: **50%**

This assessment task will be based on Field Trips 2 and 3 and includes a litter audit and a public place recycling assessment. The task will involve working in small groups to assess the litter loads (types, amounts and volume) within a designated section of a park using the NSW EPA local litter check guidelines. In these same groups a bin audit will be undertaken to evaluate correct usage of the bin types as well as mapping of bin location in relation to access and infrastructure. Observations on the use of the facilities and any observed littering will also be undertaken. The task is to write an individual report (maximum 4000 words) based on your group data to assess bin placement, bin number and type, and litter loads. The report should include any management recommendations based on your findings. This report should follow standard report writing format (e.g. Introduction and aim, Methods, Results, Discussion, Conclusions and Recommendations and References). Further details will be provided on the Unit's iLearn site.

On successful completion you will be able to:

- 1. Understand the basic scientific and technical principles involved in pollution control and waste management.
- 2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Scenario Presentaion

Due: **Week 13 08/11/2017**

Weighting: **30%**

Students working in groups will be assigned a scenario topic in Week 9 with which they have to assess the opportunities and challenges of the application of technologies for pollution control and waste management to that scenario. A group presentation of the findings will be presented in class. Marks will be divided up with 20% for the group presentation and 10% based on a peer reviewed individual performance.

The peer assessment will undertaken via the SPARKPLUS program and is a compulsory component of the assessment. Details will be provided on the Unit's iLearn page.

On successful completion you will be able to:

- 1. Understand the basic scientific and technical principles involved in pollution control and waste management.
- 2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Delivery and Resources

DELIVERY

Delivery is via a weekly 3 hour Lecture/tutorial block.

In Teaching Weeks 4, 6, and 8 a half day field trip (starting at 2 or 3pm depending on the trip) replaces the scheduled class times for that week and are compulsory. Bus transport will be provided for Field Trips 1 and 3. Access to Field Trip 2 is by foot. Students to meet in the E5A compound (out the back near the demountable) for all field trips, unless given further instruction. Closed in shoes, sensible field wear, hat, water bottle, notebook and pencil are needed for all field trips. Rain coat may be required.

The Week 9 practical scenario exercise (in prescribed class time) and the associated Week 13 group presentation and peer assessment are also compulsory.

Field Trip Work, Health and Safety

The safety of you and those around you is our highest priority. Consequently, ALL participants in fieldwork activities are obliged to work and behave appropriately in the field, and to take care to protect their own health, safety and welfare and that of fellow fieldwork participants. You are required to follow instructions from the Fieldwork Leader at all times.

Prior to the fieldwork, you must let the Fieldwork Leader know of any allergies, special dietary requirements or medical considerations that may affect your ability to participate in fieldwork.

You will need to complete a declaration of a known medical condition form, outlining a treatment plan for your condition. Details of your responsible next of kin must also be provided in-case of emergencies. This is all undertaken via the online Field Friendly link you will be provided.

You are required to wear and carry clothing and footwear as appropriate to the fieldwork situation. Your Fieldwork Leader will advise you as to what these are prior to the fieldtrip. Irrespective of the activity, footwear must be worn. For all fieldwork activities, a hat, sunscreen, insect repellent and items to protect against unexpected weather changes, such as rain & cold, are strongly recommended. The Fieldwork Leader reserves the right to exclude anyone that is ill-equipped from the activity.

If you are taking any medication, please ensure that you take sufficient supplies with you on the field trip. The University's staff are unable, by law, to provide this to you. This includes pain relief, such as panadol, cold and flu medication and anti-histamines for allergies. If you need to leave the field location for any reason prior to completion of the scheduled activities, you must first inform the Fieldwork Leader. In the event of illness or injury, please let the Fieldwork Leader know immediately. All injury's or incidents must be reported via the on-line reporting system: <http://www.ohs.mq.edu.au/form5a.php> Alcohol is a significant contributing factor in many incidents and acts of prejudicial conduct.

Alcohol must not be consumed when undertaking fieldwork activities or when using a motor vehicle/machinery.

For more information, contact:

Russell Field - Fieldwork Manager (Dept of Environmental Sciences) Macquarie University NSW 2109. (Ph.) 98508341

RESOURCES

There is no prescribed text for this unit.

The following lists some useful resources.

Books

- Buonicore A & Davis W 1992 Air pollution engineering manual Van Nostrand Reinhold, New York.
- Eckenfelder W 1989 Industrial water pollution control McGraw Hill, New York.
- Bruel & Kjaer 1986 Noise control: principles and practice Naerum:Bruel & Kjaer, Denmark.
- Tchobanoglous G, Theisen H & Eliassen R 1977 Solid wastes: engineering principles and practice McGraw Hill, New York.

Websites

National

National Environment Protection Council <http://www.nepc.gov.au/>

Environment Australia (Commonwealth) <http://www.erin.gov.au/> National Pollutant Inventory
<http://www.environment.gov.au/epg/npi/>

Natural Heritage Trust (Commonwealth) <http://www.nht.gov.au/>

State

EPA (NSW) <http://www.epa.nsw.gov.au/>

EPA (Vic) <http://www.epa.vic.gov.au/>

Dept of Environment and Heritage (Qld) <http://www.env.qld.gov.au/>

Dept of Environment (Tas) <http://www.del.mtas.gov.au/>

EPA (SA) <http://www.epa.sa.gov.au/>

Environment Department (WA) <http://www.enviro.n.wa.gov.au/>

International

World Bank <http://www.worldbank.org/>

Environment Canada <http://www.ec.gc.ca/> UK Environmental Agency <http://www.environment-agency.gov.uk>

US Environmental Protection Agency <http://www.epa.gov/>

Unit Schedule

| Week | Topic | Staff Teaching | Assessment |
|-----------------|---|----------------------|--------------------------------|
| 1 (02/08/17) | Unit Overview and Introduction to Environmental pollution regulation | Scott Wilson (SW) | |
| 2 (09/08/17) | Air Quality and management | SW | |
| 3 (16/08/17) | Contaminated land and Groundwater assessment | SW/Guest Lecturer | |
| 4 (23/08/17) | *Field trip 1 - Air and land contamination issues (Orica Botany visit) | SW | |
| 5 (30/08/17) | Waste control and management 1 | SW | |
| 6 (06/09/1) | *Field trip 2 – Waste management issues (Litter audit) | SW | Report 1 – 20% (due: 08/09/17) |

| | | | |
|--------------------|--|--------------------|--|
| 7 (13/09/17) | Waste control and management 2 | SW | |
| Mid semester break | | | |
| Mid semester break | | | |
| 8 (04/10/17) | *Field trip 3 – Waste Management (Recycling) | SW | |
| 9 (11/10/17) | Scenario Practical exercise | SW | Report 2 – 50% (due: 13/10/17) |
| 10 (18/10/17) | Water pollution and management | SW/ Guest Lecturer | |
| 11 (25/10/17) | Sustainability and Management | SW | |
| 12 (01/11/17) | Risk Assessment and Environmental Auditing | SW/Guest Lecturer | |
| 13 (08/11/17) | Presentation of group work – Scenario exercise | SW | Presentation of group work – 30% (due: 08/11/17) |

Policies and Procedures

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

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, 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.

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) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

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

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.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and

decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Orica Site Assessment
- Litter and Recycling Audit
- Scenario Presentaion

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- 1. Understand the basic scientific and technical principles involved in pollution control and waste management.
- 2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Orica Site Assessment
- Litter and Recycling Audit
- Scenario Presentaion

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- 1. Understand the basic scientific and technical principles involved in pollution control and waste management.
- 2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 3. Knowledge of essential regulatory requirements for pollution control, remediation and waste management.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Orica Site Assessment
- Litter and Recycling Audit
- Scenario Presentaion

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- 2. Apply this understanding of pollution control techniques and waste management strategies to relevant real world scenarios.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Orica Site Assessment
- Litter and Recycling Audit
- Scenario Presentaion

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcome

- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Orica Site Assessment
- Litter and Recycling Audit
- Scenario Presentaion

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- 4. Appreciate the requirements for corporate pollution control and waste management versus corporate social responsibility.
- 5. Critically analyse pollution control and waste matters for management and express findings in clear and cogent reports and/or seminars.

Assessment tasks

- Litter and Recycling Audit
- Scenario Presentaion

Changes from Previous Offering

- The Unit content has been altered from previous offerings with a more even spread of pollution control and waste management issues covered.
- An increase in field trips examining real world scenarios have been added.
- Assessment tasks have been altered to better assess theoretical knowledge with practical applications.