## School of Environmental and Life Sciences

# ENVS3750: Industrial Ecology for EOHS

Singapore PSB
Trimester 1 - 2024 (Singapore)

COURSE OUTLINE

# OVERVIEW

**Course Description**
Overviews sources of and control strategies for air, water and soil pollution; waste management and waste minimisation; drainage and flood control; pests and pest control, and sanitation. Relevant legislation is referred to in context.

**Academic Progress Requirements**
Nil

**Requisites**
To enrol in this course students must be active in the Bachelor of Environmental and Occupational Health and Safety.

**Contact Hours**
**Singapore PSB**
**Integrated Learning Session**
Face to Face On Campus
40 hour(s) per term
Contact hours are not regular or on a weekly basis, since delivery will take place on some week-ends and evenings, i.e., there will be some intensive block teaching. Total face to face contact will be 40 hours.

**Unit Weighting Workload**
10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

# CONTACTS

**Course Coordinator**

**Newcastle Australia Institute of Higher Education**
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**Teaching Staff**

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**School Office**

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T: +65 6885 1000
Questions/ Requests can be logged through:
http://psb-academy.force.com/case/CM_LogCaseForm

# SYLLABUS

**Course Content**

The course covers some of the fundamentals of ecology and of industrial ecology. It integrates the two areas and examines how practices in the workplace can be carried out more effectively and efficiently in terms of promoting ecosystem health. Major topics are:

1. Ecosystem health: perspectives, problems and possibilities
2. Matter and energy
3. Ecosystems, food webs, and water and nutrient cycling
4. Biodiversity and rates of change - Evolution, adaptation, niches and biomes
5. Human activity, stressors, resilience, and ecosystem health
6. Non-renewable versus renewable - Energy and other resources
7. Industrial ecology and its connection to environmental science
8. Life cycles and budgets: Introduction to life cycle assessment
9. Designing for efficiency
10. Opportunities for industrial ecology

**Course Learning Outcomes**

**On successful completion of this course, students will be able to:**

1. Describe an ecosystem and analyse it in terms of its components and explain the connections between them.

2. Explain the energy flows and waste streams in a complex ecosystem.

3. Describe a workplace or an industrial setting from an ecological perspective.

4. Apply an industrial ecological approach to critically evaluate a workplace or an industrial process for ways to improve energy use and decrease the waste stream.

5. Demonstrate an understanding of the connection between the broader environment and relevant components of workplace health and safety relative to the concept of ecosystem health.

6. Be able to undertake a case study in evaluating a process or industry from an industrial ecological perspective with a view to proposing recommendations for lower environmental.

**Course Materials**

**Recommended Text:**
Industrial Ecology and sustainable Engineering. 2010.
Author: TE Graedel and BR Allenby Publisher: Pearson Education.
ISBN 978-0-13-814034-2

# ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

| | Assessment Name | Due Date | Involvement | Weighting | Learning Outcomes |
|---|---|---|---|---|---|
| **1** | Class Test - Progress Test | 21 February 2024 | Individual | 25% | 1, 2, 3 |
| **2** | Written Assignment | 30 March 2024 | Individual | 35% | 1, 2, 3, 4, 5, 6 |
| **3** | Examination: Formal | Examination Period | Individual | 40% | 1, 2, 3, 4, 5, 6 |

**Late Submissions** The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

## Assessment 1 - Class Test - Progress Test

**Assessment Type** In Term Test
**Description** The test will consist of short-answer questions which cover the topics taught from weeks 1-6. 2 Hours
**Weighting** 25%
**Due Date** 21 February 2024
**Submission Method** Formal test
**Assessment Criteria** According to test marking scheme
**Return Method** In class
**Feedback Provided** In class

## Assessment 2 - Written Assignment

**Assessment Type** Written Assignment
**Description** A group assignment will be conducted in groups of 3-4 students. The assignment is based on a qualitative life cycle assessment of a product with the view of promoting a general understanding of the environmental impact of the product from manufacture through use and disposal. The assignment will be distributed on 9 January 2024 and a final report submission by 30 March 2024 (electronic copy via TURNITIN on Canvas)
**Weighting** 35%
**Due Date** 30 March 2024
**Submission Method** Online
**Assessment Criteria** According to marking scheme
**Return Method** Online
**Feedback Provided** Online feedback provided through Turnitin marking system

## Assessment 3 - Examination: Formal

**Assessment Type** Formal Examination
**Description** The Examination will consist of 5 short-answer and 1 long-answer question covering all the topics taught in the course.
**Weighting** 40%
**Due Date** Examination period
**Submission Method** Formal exam
**Assessment Criteria** According to final exam marking scheme
**Return Method** -
**Feedback Provided** None

# ADDITIONAL INFORMATION

**Grading Scheme**

This course is graded as follows:

| Range of Marks | Grade | Description |
|---|---|---|
| 85-100 | High Distinction (HD) | Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives. |
| 75-84 | Distinction (D) | Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives. |
| 65-74 | Credit (C) | Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes. |
| 50-64 | Pass (P) | Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes. |
| 0-49 | Fail (FF) | Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action. |

*Skills are those identified for the purposes of assessment task(s).

**Communication Methods**

Communication methods used in this course include:

- Booking appointment through telephone following by direct contact with lecturer/ course coordinator during consultation hours.
- Email communication to lecturer/ course coordinator.

**Course Evaluation**

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

**Oral Interviews (Vivas)**

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure. In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule.

**Academic Misconduct**

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.

**Adverse Circumstances**

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or

4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
https://policies.newcastle.edu.au/document/view-current.php?id=236

**Important Policy Information**

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/no-room-for/policies-and-procedures that support a safe and respectful environment at the University.

*This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.*