

COURSE DETAILS

Units of Credit	6
Contact hours	5 days in early December 2015 + three additional workshops in December 2015, January 2016 and February 2016.
Class	During the Summer Semester 2015/16 (see dates, class times and rooms below)
Course Coordinator and Lecturer	A/Prof Tommy Wiedmann , email: t.wiedmann@unsw.edu.au
Lecturers	Dr Juan-Pablo Alvarez Gaitan , email: j.alvarezgaitan@unsw.edu.au Dr Michalis Hadjikakou , email: m.hadjikakou@unsw.edu.au Yumi Kobayashi , email: y.kobayashi@unsw.edu.au

COURSE DESCRIPTION

This course provides an introduction to principles of Ecologically Sustainable Development (ESD) and their social, economic and political context. It introduces methods, techniques and tools used by regional and corporate environmental managers to implement ESD principles in organisations and regions.

These methods and tools include a range of environmental assessment techniques that can be applied at a product level (Life Cycle Assessment), at a corporate and regional level (Materials Flow Analysis) and at a regional and national level (Environmental Footprint and Input-Output Analysis). The social, economic and political constraints on use of information from these tools to develop improved environmental management at different economic scales will be addressed through case studies and two group assignment projects.

The course will introduce principles and methods of Industrial Ecology (IE) and the preparation of Environmental Impact Statements (EIS), Environmental Management Systems (EMS) and Environmental Reports (ER).

A group site visit will be conducted, as an introduction to sustainability initiatives implemented in practice.

OBJECTIVES

To introduce students outside the Engineering Faculty to principles of Ecologically Sustainable Development (ESD) and the contexts in which they have arisen and in which they are implemented. To develop students' understanding of the various methods and techniques (analytical tools) of Industrial Ecology used by regional and corporate environmental managers to implement ESD principles in organisations and regions. To expose students to the practice of real-world sustainability projects and initiatives in the region.

TEACHING STRATEGIES

The following teaching strategies will be used in this course. Students are encouraged to direct their own learning to get the most out of their participation in this course.

Lectures	<ul style="list-style-type: none">• Take notes on skeleton overheads provided to get a full set of reference notes for the course.• Participate in class discussions and work out example problems in class.• Ask questions on how the content of lectures applies to assignment questions.• Hear announcements on course changes
Workshops	<ul style="list-style-type: none">• Work actively in small ad hoc groups on problems set in class.• Be guided by discussion questions and additional reading• Participate and attempt all workshop questions• Ask questions
Private Study	<ul style="list-style-type: none">• Review lecture material, reference books, and resources on UNSW Moodle.• Work in groups on class assignments.• Reflect on class problems and assignments.• Download materials from UNSW Moodle and work through additional readings provided.• Keep up with notices, join the discussion and find out marks via UNSW Moodle.
Assessment	<ul style="list-style-type: none">• Answer quiz questions in class.• Demonstrate your knowledge and skills in workshops, exercises and assignments.• Demonstrate ability to work effectively in a group by completing the group assignment.• Demonstrate higher understanding and problem solving on real world problems in hypothetical, but realistic problem settings in workshops.

EXPECTED LEARNING OUTCOMES

After successfully completing this course, students should be able to:

1. Provide a definition of sustainability; list the principles of Ecologically Sustainable Development (ESD), and describe the context in which they have arisen and in which they are implemented.
2. Identify sources of information that can be used in assessing progress towards ecological sustainability.
3. Use provided data to undertake analysis of simple facilities and systems using material flow analysis, environmental life cycle assessment, environmental input-output and footprint analysis.
4. Work together in interdisciplinary groups to investigate the environmental sustainability of households, companies and projects.
5. Assess a problem to know which tool(s) are appropriate in quantitatively understanding it, and describe how information from the application of these tools can be used to improve ecological sustainability outcomes in households, corporations and regions.
6. Describe the typical structure and format of an EIS, EMS and environmental report.

COURSE PROGRAM

Summer Semester 2015/16

Date & Room	Time	Topic (<u>L</u>ectures, <u>W</u>orkshops and <u>A</u>ssessments)	Lecturer
Tuesday, 1 Dec 2015, Elec Eng 224	9am- 12pm	Course introduction and overview, Sustainable Development Principles, Principles of Industrial Ecology (L)	Michalis Hadjidakou
	2-5pm	Material Flow Analysis (MFA) (L & W)	Tommy Wiedmann
Wednesday, 2 Dec 2015, Elec Eng 224	9am- 12pm	Life Cycle Assessment (LCA) 1 (L & W)	Juan-Pablo Alvarez Gaitan
	2-5pm	Life Cycle Assessment (LCA) 2 (L & W)	Juan-Pablo Alvarez Gaitan
Thursday, 3 Dec 2015, Elec Eng 224	9am- 12pm	Environmental Footprint Analysis 1 (ecological and carbon footprints) (L & W)	Michalis Hadjidakou
	2-5pm	Environmental Footprint Analysis 2 (water and other footprints) (L & W)	Michalis Hadjidakou
Friday, 4 Dec 2015, Elec Eng 224	9am- 12pm	Introduction to environmental and sustainability decision making (L & W)	Yumi Kobayashi
	2-5pm	Site visit to sustainability initiatives	tbc
Tuesday, 8 Dec 2015, Elec Eng 224	9am- 12pm	Environmental Impact Statements (EIS), Environmental Management Systems (EMS), Environmental reporting (L & W)	Juan-Pablo Alvarez Gaitan
	2-5pm	Assessable Quiz and briefing workshop (A & W)	Juan-Pablo Alvarez Gaitan, Yumi Kobayashi
Wednesday, 16 Dec 2015, CivEng 101	2-5pm	Assignment 1 review workshop (W, attendance optional)	Juan-Pablo Alvarez Gaitan & Michalis Hadjidakou
Thursday, 28 Jan 2016, CivEng 101	2-5pm	Assignment 2 review workshop (W, attendance optional)	tbc
Thursday, 11 Feb 2016, CivEng 101	2-5pm	Presentation workshop (Assignment 2) (A)	All lecturers

Attendance of all lectures and workshops is compulsory except for the two assignment review workshops.
The final workshop on 11 February 2016 is compulsory.

The total time of study, including lectures, workshops, site visits and two assignments, is equivalent to 150 hours.

ASSIGNMENT SCHEDULE

This course will be fully assessable by one quiz during class and two assignments as indicated below. There is no exam for this course.

Ass't	Topic	Value	Due Date
1	Assessable Quiz	10%	During class on day 5
2	Assignment 1: Carbon Footprint of Households	50%	15 January 2016
3	Assignment 2: Topic presentation in class	40%	11 February 2016

The Quiz is closed-book and covers the content of the first four days of the course. Students who attend all lecture & workshops will be well equipped to answer all Quiz questions.

For each of the two assignments there will be a review workshop half-way through the assignment preparation period. There will also be the possibility to post and discuss questions online via UNSW Moodle.

In the second assignment, students need to prepare a presentation on a given topic. Depending on the number of students in the group this will be an oral presentation or a poster + oral presentation (10 min per group). Group members will be asked to provide their individual contributions to group assignment tasks.

Extensions of time for the group assignment will only be granted in the case of medical or personal emergencies, and only if requested prior to the due date.

Late submissions will be penalised at the rate of 5% of the available marks per day (or part thereof) after the due date and time.

ASSIGNMENT MARKING POLICY

In general terms, the assignment will be assessed against the following criteria:

- Evidence of understanding of concepts.
- Ability to apply concepts to real world problems, and to make judgements based on incomplete data and the need to simplify systems in order to develop solutions.
- Clarity of description, explanation and attention to the focus of the assignment.
- Ability to structure an assignment logically and limit it to a reasonable length.

Please keep a copy of all assignment work you submit for this course!

LEARNING RESOURCES

A UNSW Moodle module has been created for this subject (<https://moodle.telt.unsw.edu.au>).

Lecture notes can be downloaded from Moodle and marks for assignment will also be released on the web. A discussion forum is available for students to post questions related to the course and assignment.

There is no prescribed textbook for this subject. Comprehensive readings will be indicated in the lectures.

DATES TO NOTE

Refer to this website for Important Dates: <https://student.unsw.edu.au/dates>

PLAGIARISM

Plagiarism is the unacknowledged use of other people's work, including the copying of assignments written by other students or material found on the web. Plagiarism is considered a serious offence by the University and severe penalties may apply (**students who plagiarise may fail the course and are liable to disciplinary action, including exclusion from enrolment**). Any plagiarism may be referred to the Head of School for further action.

When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at: <https://student.unsw.edu.au/plagiarism>.

COMMON SCHOOL INFORMATION

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations,
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee

please refer to the Student Resources pages on the CVEN School website:

<http://www.engineering.unsw.edu.au/civil-engineering/enrolment>