UNSW Course Outline

SUSD0002 Building Ecology and Life Cycle Thinking - 2024

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General Course Information

Course Code : SUSD0002
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Arts, Design and Architecture
Academic Unit : School of Built Environment
Delivery Mode : Online
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Building Ecology and Life Cycle Thinking introduces a whole-of-life approach to built environment sustainability. This course discusses design approaches in the changing environmental/climate context. You will learn about the life cycle of built form from the availability and acquisition of

natural resources and raw materials, through processing and manufacture to on-site construction and use, maintenance and refurbishment, and eventual demolition and reuse/ recycling or disposal. This course introduces various environmental assessment methods adopted in the built environment sector to minimise initial and recurrent embodied carbon, waste generation and operational carbon throughout the life of buildings.

Relationship to Other Courses

This elective course attracts students from diverse academic backgrounds who seek to expand their knowledge of building ecology and life cycle thinking. In particular, architectural students use the knowlege gained in this course to various Design studios (ARCH7202, ARCH7251, ARCH7252 ARCH7253 ARCH7254, ARCH7112).

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain building ecology/life cycle thinking drawing on an environmental sustainability perspective.
CLO2 : Explain and evaluate tools used in building assessment such as life cycle assessment (LCA) and environmental rating systems.
CLO3 : Analyse and justify the selection of construction materials and products based on their environmental implications.
CLO4 : Apply statutory controls associated with building design and materials selection to reduce carbon emissions.

Course Learning Outcomes	Assessment Item
CLO1 : Explain building ecology/life cycle thinking drawing on an environmental sustainability perspective.	• Sustainable Building Report • Designing a Carbon-Neutral Building • Class activities
CLO2 : Explain and evaluate tools used in building assessment such as life cycle assessment (LCA) and environmental rating systems.	• Sustainable Building Report • Designing a Carbon-Neutral Building • Class activities
CLO3 : Analyse and justify the selection of construction materials and products based on their environmental implications.	• Designing a Carbon-Neutral Building • Class activities
CLO4 : Apply statutory controls associated with building design and materials selection to reduce carbon emissions.	• Designing a Carbon-Neutral Building • Class activities

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

The course is designed to expose students to a wide spectrum of relevant real-world issues, opportunities and case studies from leading industry experts. The course interrogates various aspects related to sustainable built environment with specific emphasis on the role of 'ecological design' and 'life cycle thinking' in built environment projects. The assessments are designed to develop a clear understanding and critical thinking around ecological design, selection of low carbon building materials and applying life cycle thinking in built environment projects.

The course adopts an intensive 'blended learning' approach, i.e. pre-recorded lecture contents and live online interactions to enhance the learning experience. The majority of the lecture contents are delivered online (pre-recorded videos) and supplemented with reading materials on a weekly basis.

The resources are made available to the students through Moodle. Each online weekly lecture module is on average 35 – 50 minutes long recorded videos. The modules introduce theoretical concepts, different design approaches and real-life examples from around the world. Student learning is supplemented with two scientific papers each week. It is expected that students will complete online quizzes and submit a short-written assignment on a weekly basis. It is expected that you will need to spend up to four hours per week to complete each module. The assignments (both individual and group) will require a time commitment aside from regular weekly hours.

Additional Course Information

Additional information will be available on Moodle.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Sustainable Building Report Assessment Format: Group	30%	Start Date: Week 1 Due Date: 05/07/2024 11:55 PM
Designing a Carbon-Neutral Building Assessment Format: Individual	50%	Start Date: Week 7 Due Date: 09/08/2024 11:55 PM
Class activities Assessment Format: Individual	20%	Start Date: Week 1 Due Date: Weekly

Assessment Details
Sustainable Building Report

Assessment Overview

Working in a group, you will write a report evaluating an exemplary sustainable building based on its design strategies, material selection and post-occupancy performance. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Explain building ecology/life cycle thinking drawing on an environmental sustainability perspective.
- CLO2 : Explain and evaluate tools used in building assessment such as life cycle assessment (LCA) and environmental rating systems.

Detailed Assessment Description

This is a group assignment, with 2-3 students in each group. You will be assigned to a group.

Select an acclaimed 'ecological' design of your choice and critique the designer's responsiveness to environmental issues in the design, material selection and post-occupancy performance.

This group assignment assesses students' competency in identifying ecological responsiveness in building design, material selection and overall positive outcomes for users and the environment. Based on the available literature, students should also evaluate the building's post-occupancy performance. The assignment should cover the minimum contents as outlined in the assessment brief (available on Moodle).

Assessment Length

2,500 words

Submission notes

One PDF file via Moodle.

Assessment information

Aditional information is provided on Moodle.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Designing a Carbon-Neutral Building

Assessment Overview

You will develop environmental design strategies for a given location, critique the environmental performance of a given house and redesign it to demonstrate its journey towards carbon neutrality in its lifetime. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Explain building ecology/life cycle thinking drawing on an environmental sustainability perspective.
- CLO2 : Explain and evaluate tools used in building assessment such as life cycle assessment (LCA) and environmental rating systems.
- CLO3 : Analyse and justify the selection of construction materials and products based on their environmental implications.
- CLO4 : Apply statutory controls associated with building design and materials selection to reduce carbon emissions.

Detailed Assessment Description

Your client has a set of drawings of an energy-efficient design (NatHERS 7 stars) and is happy with the layout and design of the house. However, the client is unsure about the overall environmental performance of the house (i.e. embodied carbon, operational carbon and demolition stage energy/ carbon implications).

The client would like to know the following:

- Scenario 1: A base case – Embodied carbon and operational carbon of the current design (as provided to you along with the material specification)
- Scenario 2: An exemplary environmental design – The client wants to achieve carbon neutrality within the building's normal life (assume 50 years). You need to explore, if it is possible. You are not allowed to change the building footprint. However, you can change building materials, internal layout and roofing. Your design should adhere to the National Construction Code (NCC) and local council regulations.

This assignment assesses students' competency in conducting a simplified life cycle assessment study and their skills and creativity in proposing and presenting building design scenarios to the client. Through this assignment, the students should promote 'ecological building design' by demonstrating various benefits of the design for now and in future. They should also adhere to the client's environmental goals. The assignment should at least cover minimum contents as outlined in the assment brief available on Moodle.

Assessment Length

3,000 words

Submission notes

One PDF file via Moodle

Assessment information

Additional information is provided on Moodle.

Assignment submission Turnitin type

This is not a Turnitin assignment

Class activities

Assessment Overview

You will engage in class activities, including discussions and reflections. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Explain building ecology/life cycle thinking drawing on an environmental sustainability perspective.
- CLO2 : Explain and evaluate tools used in building assessment such as life cycle assessment (LCA) and environmental rating systems.
- CLO3 : Analyse and justify the selection of construction materials and products based on their environmental implications.
- CLO4 : Apply statutory controls associated with building design and materials selection to reduce carbon emissions.

Detailed Assessment Description

There are three components:

- Quizzes (5%)
- A 300-word write-up on a given topic, followed by a peer review of the write-up (10%)
- Contribution in online discussion forum (5%)

Please avoid using ChatGPT or any other AI-based tools to create your '300-word write-up on a given topic' or "your contribution in the online discussion forum. It is important that your work is original and demonstrates your own understanding and effort.

Assessment Length

N/A

Submission notes

Please refer to the Assessment guide on Moodle for additional information.

Assessment information

Please refer to Moodle for additional information.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

For assessment tasks in this course, you may use AI-based software to research and prepare prior to writing your assessment. You are permitted to use standard editing and referencing functions in word processing software in the creation of your submission (note: this is limited to spelling and grammar checking and reference citation generation). You must not use any functions that generate or paraphrase or translate passages of text, whether based on your own work or not.

Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Please refer to the invidual assessment briefs for more information.

Grading Basis

Standard

Requirements to pass course

Achieving a total of 50 marks across three assessments is required to pass this course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Activity	Watch lecture videos • Module 1: Environmental context and challenges Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Contribute to online discussion forum
	Seminar	Course introduction Assessment introduction Guest lecture Discussions
Week 2 : 3 June - 9 June	Activity	Watch lecture videos • Module 2: Building ecology and life cycle thinking Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
Week 3 : 10 June - 16 June	Activity	Watch lecture videos • Module 3: Ecologically responsive design and building materials Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Seminar	Students will talk about their case study buildings (as part of Assessment -1) - group presentation
Week 4 : 17 June - 23 June	Activity	Watch lecture videos • Module 4: Common building materials Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Assessment	A1 Preliminary submission for formative feedback (21st June 2024 11:55 PM)
Week 5 : 24 June - 30 June	Activity	Watch lecture videos • Module 5: Recycling and reusing building materials Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Seminar	Feedback on Assessment -1 preliminary submission Guest lecture
Week 6 : 1 July - 7 July	Activity	Watch lecture videos • Module 6: New environment-friendly building materials Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Assessment	Assessment -1 final submission (5th July 2023 11:55 PM)
Week 7 : 8 July - 14 July	Activity	Watch lecture videos • Module 7: Building retrofitting and reuse Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Seminar	Assessment -2 introduction Guest lecture
Week 8 : 15 July - 21 July	Activity	Watch lecture videos • Module 8: Embodied energy/ carbon Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Assessment	Assessment -2 preliminary submission (19th July 2024 11:55 PM)
Week 9 : 22 July - 28 July	Activity	Watch lecture videos • Module 9: Environmental impact evaluation of buildings

		Read assigned papers and attempt quizzes Submit a 300-word response on the given topic Provide a peer review for the assigned write-up Contribute to online discussion forum
	Seminar	Guest lecture Course wrap up
Week 10 : 29 July - 4 August	Activity	Provide a peer review for the assigned write-up
Week 11 : 5 August - 11 August	Assessment	Assessment -2 final submission (9th August 2024 11:55 PM)

Attendance Requirements

You are expected to be regular and punctual in attendance at all classes for the School of Built Environment courses in which you are enrolled. If and where individual courses have specific attendance requirements, these will be stated in the course outline.

If you do not attend, engage, or participate in scheduled class activities, including lectures, tutorials, studios, labs, etc, you run the risk of failing a course.

If illness or unexpected and beyond your control circumstances prevent you from completing a task on time, or substantially disturb your assessment performance, you should apply for Special Consideration, as soon as practicable, accompanied by appropriate documentation.

No special consideration will be provided if you miss out on essential course information and materials, or if you miss assessment tasks and deadlines due to unexplained absences or an unapproved lack of attendance.

You may be advised by the Course Convenor to withdraw from the course if significant learning activities are missed.

General Schedule Information

This course is delivered online - lectures are pre-recorded and tutorials are live sessions. Tutorials are scheduled every other Thursday from 3 pm to 7 pm (on weeks 1, 3, 5, 7, and 9) and follow a seminar format.

Course Resources

Prescribed Resources

Learning resources are listed on Moodle.

Recommended Resources

Learning resources are listed on Moodle.

Additional Costs

No additional costs.

Course Evaluation and Development

Student feedback on this course is formally collected through the myExperience process. All students will get the chance to formally feedback towards the end of the term. For more details, see here: https://www.student.unsw.edu.au/myexperience. However, students are also encouraged to send any feedback, concerns, or comments to the course convenor at any time during the term.

Previous students told us to provide more resources on calculating embodied carbon.

We have responded to this feedback by including a session on introducing various methods to calculate embodied carbon of a simple building.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lecturer	Anir Upad hyay		Room 4009, Level 4, Anita B. Lawrence Centre	NA	Send an email to inquire about availability or to schedule a consultation	Yes	Yes

Other Useful Information

Academic Information

Due to evolving advice by NSW Health, students must check for updated information regarding online learning for all Arts, Design and Architecture courses this term (via Moodle or course information provided).

Please see: https://www.unsw.edu.au/arts-design-architecture/student-life/resources-support/protocols-guidelines for essential student information relating to:

- UNSW and Faculty policies and procedures;

- Student Support Services;
- Dean’s List;
- review of results;
- credit transfer;
- cross-institutional study and exchange;
- examination information;
- enrolment information;
- Special Consideration in the event of illness or misadventure;
- student equity and disability;

And other essential academic information.

Academic Honesty and Plagarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement.

UNSW groups plagiarism into the following categories:

- Copying: Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment without appropriate acknowledgement.
- Inappropriate paraphrasing: Changing a few words and phrases while mostly retaining the original information, structure and/or progression of ideas of the original without acknowledgement. This also applies in presentations where someone paraphrases another’s ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.
- Collusion: Working with others but passing off the work as a person’s individual work. Collusion also includes providing your work to another student for the purpose of them plagiarising, paying another person to perform an academic task, stealing or acquiring another person’s academic work and copying it, offering to complete another person’s work or seeking payment for completing academic work.
- Inappropriate citation: Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.
- Duplication ("self-plagiarism"): Submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another university.

The UNSW Academic Skills support offers resources and individual consultations. Students are also reminded that careful time management is an important part of study. One of the identified

causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and proper referencing of sources in preparing all assessment items. UNSW Library has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW, but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Use of AI for assessments

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where the use of AI tools, such as ChatGPT, has been permitted by your course convener, they must be properly credited and your submissions must be substantially your own work.

In cases where the use of AI has been prohibited, please respect this and be aware that where unauthorised use is detected, penalties will apply.

Use of AI for assessments | UNSW Current Students

Submission of Assessment Tasks

Turnitin Submission

If you encounter a problem when attempting to submit your assignment through Turnitin, please telephone External Support on 9385 3331 or email them on externalteltsupport@unsw.edu.au

Support hours are 8:00am – 10:00pm on weekdays and 9:00am – 5:00pm on weekends (365 days a year). If you are unable to submit your assignment due to a fault with Turnitin, you may

apply for an extension, but you must retain your ticket number from External Support (along with any other relevant documents) to include as evidence to support your extension application. If you email External Support, you will automatically receive a ticket number, but if you telephone, you will need to specifically ask for one. Turnitin also provides updates on their system status on Twitter.

Generally, assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, alternative submission details will be stated on your course's Moodle site. For information on how to submit assignments online via Moodle: https://student.unsw.edu.au/how-submit-assignment-moodle

Late Submission Penalty

UNSW has a standard late submission penalty of:

- 5% per calendar day,
- for all assessments where a penalty applies,
- capped at five calendar days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request Special Consideration as early as possible before the deadline. Support with Time Management is available here.

School Contact Information

beadmin@unsw.edu.au