UNSW Course Outline

ARCH1161 Architectural Science and Building Environment 1 - 2024

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General Course Information

Course Code : ARCH1161
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 : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Architectural Science and Building Environment 1 covers the design strategies and scientific understanding needed to minimise buildings' impact on natural resources and the environment. It includes life-cycle thinking in architectural design, a history of environmental design concepts

in architecture, responding to climate, design innovation, solar architecture, building fabric performance and wind, ventilation and cooling. You will learn techniques to reduce building-related carbon emissions and enhance human comfort through climate-sensitive design. In addition, you will gain the ability to analyse climatic and geomorphological context to optimise building design for sun, temperature, wind, human metabolism and perception.

Relationship to Other Courses

Students can apply the knowledge acquired in this course to design studios (ARCH1102, ARCH1201,ARCH1203, ARCH1311, ARCH1302) and further advance their understanding in Architectural Science and Building Environment 2 (ARCH1361).

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Assess the climatic factors influencing the the thermal comfort of domestic architecture.
CLO2 : Perform a lifecycle of analysis of domestic architecture in the Australian context.
CLO3 : Apply strategies, systems and technologies to enhance the environmental performance and thermal comfort of domestic architecture.
CLO4 : Explain regulations and standards that govern environmental performance in domestic buildings in Australia.

Course Learning Outcomes	Assessment Item
CLO1 : Assess the climatic factors influencing the the thermal comfort of domestic architecture.	• Home Audit • Home Redesign • Exam
CLO2 : Perform a lifecycle of analysis of domestic architecture in the Australian context.	• Home Redesign • Exam
CLO3 : Apply strategies, systems and technologies to enhance the environmental performance and thermal comfort of domestic architecture.	• Home Audit • Home Redesign • Exam
CLO4 : Explain regulations and standards that govern environmental performance in domestic buildings in Australia.	• Home Redesign

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching Strategies

This course will be taught with face-to-face lectures and tutorials. Each week students will have two primary interactions:

1. Face-to-face lectures on Fridays from 12 pm – 2:00 pm. This includes a 30-minute Q&A session with the lecturer to ask any follow-up questions from the lectures.

2. Two hours of tutorials and feedback sessions in small groups (25 students each). Each tutorial will typically spend the first hour focusing on a weekly exercise. The second hour will provide opportunities for students to get support with their assessments. In addition, several Moodle support systems are designed to help students learn specific skills or widen their knowledge on particular topics. These include interactive exercises, short weekly readings, mini quizzes, etc. You must regularly monitor the course Moodle page as it is the primary holding system for all course content.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Home Audit Assessment Format: Individual	30%	Start Date: Week 1 Due Date: 01/07/2024 09:00 AM
Home Redesign Assessment Format: Individual	40%	Start Date: Week 6 Due Date: 05/08/2024 09:00 AM
Exam Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Exam week

Assessment Details

Home Audit

Assessment Overview

You will complete a life-cycle carbon analysis of your home and reflect on climate strategies adopted in the design of your home/apartment. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Assess the climatic factors influencing the the thermal comfort of domestic architecture.

- CLO3 : Apply strategies, systems and technologies to enhance the environmental performance and thermal comfort of domestic architecture.

Detailed Assessment Description

Detailed assessment requirements are outlined in Assessment brief. Please refer to Moodle for more information.

Assessment Length

No more than 7 pages in A3 landscape format

Submission notes

Combined your entire home audit as a single PDF file (max 200 MB) and submit via Moodle.

Assessment information

Please refer to Assessment brief (available in Moodle) for additional information.

Assignment submission Turnitin type

This is not a Turnitin assignment

Home Redesign

Assessment Overview

You will develop options for redesigning your home/apartment in response to local climatic factors, thermal comfort and lifecycle considerations. Grading will be done against assessment criteria, accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Assess the climatic factors influencing the the thermal comfort of domestic architecture.
- CLO2 : Perform a lifecycle of analysis of domestic architecture in the Australian context.
- CLO3 : Apply strategies, systems and technologies to enhance the environmental performance and thermal comfort of domestic architecture.
- CLO4 : Explain regulations and standards that govern environmental performance in domestic buildings in Australia.

Detailed Assessment Description

Detailed assessment requirements are outlined in Assessment brief. Please refer to Moodle for more information.

Assessment Length

No more than 10 pages in A3 landscape format

Submission notes

Combined your entire home audit as a single PDF file (max 200 MB) and submit via Moodle.

Assessment information

Please refer to Assessment brief (available in Moodle) for additional information.

Assignment submission Turnitin type

This is not a Turnitin assignment

Exam

Assessment Overview

You will tested through an exam on the course content. Feedback will be provided by the course convenor upon request.

Course Learning Outcomes

- CLO1 : Assess the climatic factors influencing the the thermal comfort of domestic architecture.
- CLO2 : Perform a lifecycle of analysis of domestic architecture in the Australian context.
- CLO3 : Apply strategies, systems and technologies to enhance the environmental performance and thermal comfort of domestic architecture.

Detailed Assessment Description

The final exam assesses your understanding of the fundamental concepts taught in this course. The assessment will include multiple-choice questions, short written responses, and calculations.

Assessment Length

2 hours

Submission notes

Online submission

Assessment information

The exam will be conducted via a remote (online) platform, Inspera. You will receive additional information via Moodle announcements.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Detailed information about assessments will be provided during tutorial sessions. You'll have the opportunity to discuss your assessment tasks with your tutor, who will provide you with feedback to help you improve.

The Use of Artificial Intelligence in Assessments:

Assessments 1 and 2: You may use standard editing and referencing software (e.g. Microsoft Office suite, Grammarly, etc), but not generative AI.

The exam: It is prohibited to use any software or service to search for or generate information or answers.

If the use of generative AI such as ChatGPT is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Grading Basis

Standard

Requirements to pass course

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

In this course, a Supplementary Assessment may be offered at the end of term, after results for the course are finalised, to students who satisfy the following conditions:

- your final result is between 45-49FL.
- your failure of the course is not due to misconduct or lateness (and no other misconduct incidents or academic matters under review).
- you have not failed the course in previous years.
- you have attempted all assessment tasks in the course and met all attendance requirements if and as specified.

Your Course Convener will contact eligible students via email at the end of term.

A satisfactory grade for the Supplementary Assessment will result in a final mark/grade for the course of 50PS. An unsatisfactory grade for the Supplementary Assessment will result in no change to your original mark/grade for course. Once you have agreed to complete the supplementary assessment, you will have no further recourse to an appeal or a request for a review of results.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 20 May - 26 May	Online Activity	Undertake a quick internet research and find an example of a 'sustainable' building. Create a Padlet post outlining the sustainable features of this building.
Week 1 : 27 May - 2 June	Lecture	Course Introduction The Climate Crisis • The Climate Crisis and the Role of the Built Environment • A Short History of Sustainable Development
	Tutorial	Class discussion on: • What is a sustainable building, city or precinct? • What qualities does it have? • How can we judge it or measure it? Introduction to Assessment 1: Home Audit and how to draw your home
Week 2 : 3 June - 9 June	Lecture	Thermal Comfort and Climate • Thermal Comfort • Climate and Psychrometric Charts • Planning and Designing for Different Climates
	Tutorial	Activities: • Climate Analysis tutorial using Psychrometric chart Feedback: • Questions and support for Home Audit
Week 3 : 10 June - 16 June	Lecture	Climate Analysis • Using Psychrometric Chart • How to Balance Factors
	Tutorial	Activities: • Climate Analysis using the Psychrometric chart web App and CBE Clima Tool Feedback: • Questions and support for Home Audit
Week 4 : 17 June - 23 June	Lecture	Wind and Sun • Wind and Ventilation • Ventilating Buildings and Spaces • Reading a Sunpath diagram • Design and Planning Around the Sun • Glazing and shading
	Tutorial	Activities: • Wind roses exercise using CBE Clima Tool • Sunpath exercises Feedback: • Questions and support for Home Audit
Week 5 : 24 June - 30 June	Lecture	A comprehensive approach to climate analysis • Analysis of various climate elements and exploring inter-relationships for design decisions
	Tutorial	Consultation and Feedback: • Questions and support for Home Audit
Week 6 : 1 July - 7 July	Assessment	HOME AUDIT due on Monday 1st July 9 am No lecture and tutorial (RECESS)
Week 7 : 8 July - 14 July	Lecture	The Building Fabric • U-values and Insulation • Heat Loss from Conduction • Heat Loss from Convection • Solar heat gain from windows • Heating Needs and Heating Degree Days
	Tutorial	Activity: • U-value and Heat loss/ gain exercise Introduction to Assessment 2: Developing an energy efficient and environment friendly building fabric for your home (Home Redesign)
Week 8 : 15 July - 21 July	Lecture	Life Cycle Thinking • An Introduction to Lifecycle Thinking • Embodied Carbon and Material Sustainability • Build Nothing, Build Less and Build Clever
	Tutorial	Activity: • Calculating the embodied carbon of a wall • Calculating transportation related embodied carbon Feedback: • Questions and support for Home Redesign
Week 9 : 22 July - 28 July	Lecture	Building Energy Efficiency and Material Embodied Carbon in building regulations

		in Australia • An overview of the National Construction Code and NSW BASIX
	Tutorial	Activity: • Familiarising with the NCC 2022 housing energy efficiency calculator Feedback: • Questions and support for Home Redesign
Week 10 : 29 July - 4 August	Lecture	Designing for the changing climate • Understanding the future climate outlook • Developing design strategies applicable for now and future climate scenarios
	Tutorial	Consultation and Feedback: • Questions and support for Home Redesign

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

This course is delivered face-to-face on campus. Lectures are scheduled for Fridays from 12 pm to 2 pm, followed by tutorials.

Course Resources

Prescribed Resources

Learning resources are listed in Moodle.

Recommended Resources

Learning resources are listed in 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:

- Incorporate a break into 2-hour lectures for improved focus;
- Make lecture materials available in advance to familiarise with the contents discussed in the

lecture;
- Provide additional assistance outside the regular contact hours to comprehend the course content.

We have responded to the students feedback as outlined below:

- The 2-hour lecture will be divided into two parts, with a short break introduced in between.
- Lecture slides and reference materials will be made available three days prior to the class.
- Students are encouraged to contact the lecturer via email for further clarification on course content. Additionally, one-on-one consultations with the lecturer will be available after lectures, subject to prior booking.

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	N/A	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