UNSW Course Outline

# ARCH7161 Advanced Construction and Structures - 2024

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## General Course Information

**Course Code :** ARCH7161
**Year :** 2024
**Term :** Term 3
**Teaching Period :** T3
**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 :** Postgraduate
**Units of Credit :** 6

**Useful Links**

Handbook Class Timetable

## Course Details & Outcomes

### Course Description

Advanced Construction and Structures explores specialised topics in structural design and the architectural implications of specific construction solutions. You will learn tools and methods to develop complex architectural schemes that embrace environmentally sustainable principles. As

part of the course, you will be exposed to various structural solutions and construction methods that support non-standard architectural projects. You will learn how to develop a façade system emphasising thermal comfort and assembly procedures. Through a series of technical drawings and details, you will demonstrate how architectural projects address structural logic, assembly, shading and ventilation strategies.

## Course Learning Outcomes

| Course Learning Outcomes |
|---|
| CLO1 : Apply structural concepts and construction principles into the design of building frames. |
| CLO2 : Evaluate structural and construction solutions to complex architectural systems. |
| CLO3 : Develop environmentally sustainable and structurally sound architectural schemes. |
| CLO4 : Test low-carbon solutions to structural components with an emphasis on joint design and component assembly. |
| CLO5 : Employ design and research methodologies to develop façade systems for a range of building types. |

| Course Learning Outcomes | Assessment Item |
|---|---|
| CLO1 : Apply structural concepts and construction principles into the design of building frames. | • Structural Frame<br>• Facade detailing |
| CLO2 : Evaluate structural and construction solutions to complex architectural systems. | • Structural Frame<br>• Facade detailing |
| CLO3 : Develop environmentally sustainable and structurally sound architectural schemes. | • Structural Frame<br>• Facade detailing |
| CLO4 : Test low-carbon solutions to structural components with an emphasis on joint design and component assembly. | • Structural Frame<br>• Facade detailing |
| CLO5 : Employ design and research methodologies to develop façade systems for a range of building types. | • Structural Frame<br>• Facade detailing |

## Learning and Teaching Technologies

Moodle - Learning Management System

# Assessments

## Assessment Structure

| Assessment Item | Weight | Relevant Dates |
|---|---|---|
| Structural Frame<br>Assessment Format: Individual | 40% | Start Date: Not Applicable<br>Due Date: Week 5: 07 October - 13 October |
| Facade detailing<br>Assessment Format: Individual | 60% | Start Date: Not Applicable<br>Due Date: Week 11: 18 November - 24 November |

## Assessment Details

### Structural Frame

#### Assessment Overview

You will develop a section of a structural frame for a multi-storey building, focusing on structural principles, construction methods and sustainable procurement. You will create a series of technical drawings and diagrams to illustrate how your project addresses structural logic, assembly and sustainability. Your work will be evaluated based on the provided assessment criteria, and you will receive written feedback.

#### Course Learning Outcomes

- CLO1 : Apply structural concepts and construction principles into the design of building frames.
- CLO2 : Evaluate structural and construction solutions to complex architectural systems.
- CLO3 : Develop environmentally sustainable and structurally sound architectural schemes.
- CLO4 : Test low-carbon solutions to structural components with an emphasis on joint design and component assembly.
- CLO5 : Employ design and research methodologies to develop façade systems for a range of building types.

#### Detailed Assessment Description

The detailed assessment description will be available on the course's Moodle page.

#### Assignment submission Turnitin type

Not Applicable

#### Generative AI Permission Level

**Not Applicable**

Generative AI is not considered to be of assistance to you in completing this assessment. If you do use generative AI in completing this assessment, you should attribute its use.

For more information on Generative AI and permitted use please see here.

### Facade detailing

**Assessment Overview**

You will design a façade system suitable for the structural frame section you developed in Assessment 1. You will create a series of technical details to illustrate how your project addresses construction principles, shading and ventilation strategies. Your work will be evaluated based on the provided assessment criteria, and you will receive written feedback.

**Course Learning Outcomes**

- CLO1 : Apply structural concepts and construction principles into the design of building frames.
- CLO2 : Evaluate structural and construction solutions to complex architectural systems.
- CLO3 : Develop environmentally sustainable and structurally sound architectural schemes.
- CLO4 : Test low-carbon solutions to structural components with an emphasis on joint design and component assembly.
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**Detailed Assessment Description**

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Not Applicable

**Generative AI Permission Level**

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## General Assessment Information

**Grading Basis**

Standard

**Requirements to pass course**

Achieve a composite mark of at least 50 out of 100

# Course Schedule

| Teaching Week/Module | Activity Type | Content |
|---|---|---|
| Week 1 : 9 September - 15 September | Lecture | Standard vs Non-Standard: The Structural and Production Logic in Complex Architecture. |
| | Tutorial | Introduction to the first Assessment. |
| Week 2 : 16 September - 22 September | Lecture | Load, Span, Materials: Estimating Structural Sizes for Flooring Systems. |
| | Tutorial | Feedback session to advance the tasks for Assignment 1. |
| Week 3 : 23 September - 29 September | Lecture | The relationship between environmental sustainability and structural logic in a complex building. |
| | Tutorial | Feedback session to advance the tasks for Assignment 1. |
| Week 4 : 30 September - 6 October | Lecture | Space, Functions, and Columns: Structural Grids and Architectural Expression. |
| | Tutorial | Feedback session to advance the tasks for Assignment 1. |
| Week 5 : 7 October - 13 October | Lecture | Form Follows Structure: The Production of Complex Surfaces. |
| | Tutorial | Final feedback session to advance the tasks for Assignment 1. |
| | Assessment | The first assessment is due this week. Please check the Moodle page for details on the deadline and assessment criteria. |
| Week 6 : 14 October - 20 October | Fieldwork | Site visits will be organised this week. More details will be available on Moodle. |
| Week 7 : 21 October - 27 October | Lecture | Assembly Logic of Curtain Walls. |
| | Tutorial | Feedback session to advance the tasks for Assignment 2. |
| Week 8 : 28 October - 3 November | Lecture | Shading Strategies and Materials in Complex Façade Systems. |
| | Tutorial | Feedback session to advance the tasks for Assignment 2. |
| Week 9 : 4 November - 10 November | Lecture | Thermal Bridges in the Building Envelope. |
| | Tutorial | Feedback session to advance the tasks for Assignment 2. |
| Week 10 : 11 November - 17 November | Lecture | Construction Detailing in Complex Façade Systems. |
| | Tutorial | Final feedback session to advance the tasks for Assignment 2. |
| Week 11 : 18 November - 24 November | Assessment | The second assessment is due this week. Please check the Moodle page for details on the deadline and assessment criteria. |

## 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

Please check the UNSW timetable for updated information on lecture and tutorial times and locations.

# Course Resources

## Course Evaluation and Development

This is a new version of the course incorporating feedback from previous students.

We encourage and support students to maintain regular contact with the course convenor to provide informal feedback throughout the course. For specific issues or detailed feedback, please arrange a meeting with the course convenor via email.

In this course there is an option for students to provide anonymous feedback via the course's Moodle page, which is directly sent to the convenor. As a final step, students are invited to share their insights and experiences by completing the MyExperience survey. The feedback gathered each year is integral to the continuous enhancement and development of the course.

# Staff Details

| Position | Name | Email | Location | Phone | Availability | Equitable Learning Services Contact | Primary Contact |
|---|---|---|---|---|---|---|---|
| Convenor | Luciano Cardellicchio | | School of Built Environment; Anita B. Lawrence Centre (West Wing), Room 2007, Level 2, UNSW SYDNEY 2052 | +61 2 9065 3525 | Please arrange meeting via email. | No | Yes |

# Other Useful Information

### Academic Information

For essential student information relating to:

- UNSW and Faculty policies and procedures;
- Student Support Services;

- Student equity and disability;
- Special Consideration in the event of illness or misadventure;
- Examination information;
- Review of results;

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

## 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

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.

**Important note**: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

## School Contact Information

beadmin@unsw.edu.au