UNSW Course Outline

BLDG1012 Construction Materials - 2024

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General Course Information

Course Code : BLDG1012
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : No
Faculty : Faculty of Arts, Design and Architecture
Academic Unit : School of Built Environment
Delivery Mode : Multimodal
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

Construction Materials covers the primary structural materials adopted in commercial and residential projects in Australia. During this course, you will examine the composition of concrete, with a detailed analysis of the properties of its components, including cement,

aggregates, and the most utilised admixtures. You will learn how to design concrete mixes in accordance with Australian Standards. Additionally, the course presents a discussion on alternative sustainable materials that can be used in the concrete mix. The course also examines other structural construction materials, such as steel, masonry, and timber, with discussions presented on their physical and chemical properties, along with design and planning considerations that need to be accounted for. The final part of the course examines finishing material, including ceramics, claddings, curtain walls, painting, and glass. The course will also introduce you to the concept of life cycle sustainability assessment (LCSA) to select and contrast applicable construction materials.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.
CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.
CLO3 : Discuss concrete mixture design for sustainable and structural requirements.
CLO4 : Justify construction material selection based on life cycle sustainability assessment.

Course Learning Outcomes	Assessment Item
CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.	• Online Quiz 1 • Online Quiz 2 • Portfolio • Final Exam
CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.	• Online Quiz 1 • Online Quiz 2 • Portfolio • Final Exam
CLO3 : Discuss concrete mixture design for sustainable and structural requirements.	• Online Quiz 2 • Portfolio • Final Exam
CLO4 : Justify construction material selection based on life cycle sustainability assessment.	• Online Quiz 2 • Portfolio • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate

Learning and Teaching in this course

In Construction Materials, details of the major structural material adopted in commercial and residential projects will be covered. This includes examining the composition of concrete, with detailed analysis of the properties of its components, including cement, aggregates, and admixtures utilised. Students will learn how to design concrete mixes, in accordance with the Australian Standards. In addition, a discussion on alternative sustainable materials to adopt in the concrete mix will be presented. Other structural construction materials that will be examined in this course include steel, masonry and timber, with discussions presented on their physical and chemical properties, along with design and planning considerations that need to be accounted for. The final part of the course examines finishing material, including ceramics, claddings, curtain walls, painting and glass. The course will also introduce to the students the concept of life cycle sustainability assessment (LCSA) as a means of selecting and contrasting between applicable construction materials.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Online Quiz 1 Assessment Format: Individual	15%	
Online Quiz 2 Assessment Format: Individual	15%	
Portfolio Assessment Format: Individual	20%	
Final Exam Assessment Format: Individual	50%	

Assessment Details

Online Quiz 1

Assessment Overview

You will be quizzed on the fundamentals of construction materials. Feedback will be provided in the form of the correct answers.

Course Learning Outcomes

- CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.
- CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.

Online Quiz 2

Assessment Overview

You will be quizzed on sustainable construction materials and structural requirements fundamentals. Feedback will be provided in the form of the correct answers.

Course Learning Outcomes

- CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.
- CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.
- CLO3 : Discuss concrete mixture design for sustainable and structural requirements.
- CLO4 : Justify construction material selection based on life cycle sustainability assessment.

Portfolio

Assessment Overview

You will produce a portfolio of construction material modules and a life cycle sustainability framework. Grading will be done against assessment criteria accompanied by written feedback.

Course Learning Outcomes

- CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.
- CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.
- CLO3 : Discuss concrete mixture design for sustainable and structural requirements.
- CLO4 : Justify construction material selection based on life cycle sustainability assessment.

Final Exam

Assessment Overview

You will be tested through an exam on various topics in construction materials relevant to the course contents. Classwide written feedback will be provided online.

Course Learning Outcomes

- CLO1 : Describe the properties and behavior of essential construction materials, including concrete, steel, timber and masonry.
- CLO2 : Explain the fundamental material properties relevant to the selection of materials appropriate across various stages of the construction process.
- CLO3 : Discuss concrete mixture design for sustainable and structural requirements.
- CLO4 : Justify construction material selection based on life cycle sustainability assessment.

General Assessment Information

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Lecture 1: Structural Material: Concrete – Introduction, Cement Hydration
Week 2 : 19 February - 25 February	Lecture	Lecture 2: Structural Material: Concrete – Aggregates, Additives, Defects
	Workshop	Workshop 2: Cement and Concrete Basics and Cement Hydration
Week 3 : 26 February - 3 March	Lecture	Week 3: Structural Material: Testing and Structural Design
	Workshop	Workshop 3: Concrete Workability and Transport Properties; Concrete Cancer and Testing; Concrete defects
Week 4 : 4 March - 10 March	Lecture	Lecture 4: Structural Material: Concrete – Mix Design
	Workshop	Workshop 4: Concrete Aggregate gradation and Mix design
Week 5 : 11 March - 17 March	Lecture	Lecture 5: Structural Material: Steel – Introduction and Design
	Workshop	Workshop 5: Design of hot-rolled and cold rolled steel+ Transportation Requirements
Week 6 : 18 March - 24 March	Other	Non teaching week
Week 7 : 25 March - 31 March	Lecture	Lecture 7: Structural Material: Masonry – General properties and Design
	Workshop	Workshop 7: Material properties and characteristics of masonry
Week 8 : 1 April - 7 April	Lecture	Lecture 8: Structural Material: Timber – General properties and Design
	Workshop	Workshop 8: Material properties and characteristics of timber.
Week 9 : 8 April - 14 April	Lecture	Lecture 9: Sustainability in Construction; Window Selection
	Workshop	Workshop 9: Life Cycle Analysis; Window Selection
Week 10 : 15 April - 21 April	Lecture	Revision

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 through several blended learning initiatives, designed to motivate and inspire students to learn, including interactive lectures, video tutorials, hands-on workshops and on-line assessments that have been developed to foster the learning skills of students in construction materials. You will engage in a range of learning activities which will include on-line lectures and tutorials, on-line quizzes, class discussions, problem-based learning activities and a final exam. Participation in lectures and tutorials is necessary as this provides students with an opportunity to fully develop their understanding of the construction material principles presented in this course.

Course Resources

Course Evaluation and Development

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
Lecturer	Mohammed Hammad					No	No
	Chyi Lin Lee					No	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