

ARBE1101: Construction Technology

Callaghan and Online
Semester 1 - 2024



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description This course develops the student's understanding of key concepts associated with the construction, including essential performance criteria for a range of primary and secondary building elements. It similarly develops the student's understanding of structural concepts that dictate the eventual form of buildings and other engineered structures, combining elemental and structural understanding to develop the student's ability to design and construct appropriate architectural/engineering details for a variety of structures. It introduces the student to the challenges posed by a range of site conditions, materials and other environmental factors, and explores their influence upon the selection of appropriate solutions.

Contact Hours

Callaghan Lectorial

Face to Face On Campus

3 hour(s) per week(s) for 13 week(s) starting Week 1

80% attendance is compulsory for the Lectorials for all on campus, face-to-face enrolled students in ARBE1101.

All students' attendance will be recorded using the myUON App. You will need to check-in using the App.

Online Lectorial

Online

3 hour(s) per week(s) for 13 week(s) starting Week 1

Online students will receive equivalent instruction through online or other distance education strategies.

Unit Weighting Workload

10

Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10-unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator	Callaghan and Online Mr Thomas Johnson Thomas.Johnson@newcastle.edu.au (02) 4055 3430 Consultation: Full contact details available on Canvas Appointment via email is encouraged Mr Derren Lowe Derren.Lowe@newcastle.edu.au (02) 4921 5785 Consultation: Full contact details available on Canvas Appointment via email is encouraged
Teaching Staff	Other teaching staff will be advised on the course Canvas site.
School Office	School of Architecture and Built Environment Architecture Building Callaghan archbe@newcastle.edu.au +61 2 4921 5771

SYLLABUS

Course Content	Introduction Structures: <ul style="list-style-type: none">• Primary and secondary elements• Types of structures• Forces and loads Sequencing: <ul style="list-style-type: none">• Site preparation and excavation• Basement and foundation• Framing and carpentry• External walls and cladding• Interior lining: Floor, ceiling, and roof systems Material, performance, and details <ul style="list-style-type: none">• Timber• Metal – Steel• Glass• Light Structures, New materials and composites Services (Electricity, plumbing, AC, others) Safety and Security Introduction to National Construction Codes Introduction to Construction Cost Passive Architecture and Building
-----------------------	---

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Identify the function of, and desirable performance attributes required for primary and secondary structural building elements.
2. Qualitatively describe the structural performance, forces and environmental agents incumbent upon building structures.
3. Qualitatively describe the link between structure, construction sequencing and materials performance incumbent upon building structures.
4. Identify, describe and draw a range of design details.
5. Evaluate design alternatives in terms of buildability and material performance.
6. Assess relevant clauses and Australian Standards (AS) and the National Construction Code.

Course Materials

Bibliography and references available on Canvas.

SCHEDULE

Week	Week Begins	Topic	Assessment Due
1	26 Feb	Introduction and current state of professions	
2	4 Mar	Structures I / Sequencing I	
3	11 Mar	Structures II / Sequencing II	
4	18 Mar	Structures III / Sequencing III	
5	25 Mar	Services (Electricity, plumbing, AC, etc.)	
6	1 Apr	Introduction to National Construction Code; Fire Protection	Quiz 1 (Structure, sequencing and services)
7	8 Apr	Material, performance and details I: Bricks	
Mid-Semester Recess			
Mid-Semester Recess			
8	29 Apr	Material, performance and details II: Concrete and prefabricated components	Assignment 2 - (Pictorial Report)
9	6 May	Material, performance and details III: Timber	
10	13 May	Material, performance and details IV: Metal, glass, light-weight material, new materials and composites	
11	20 May	Introduction to Construction Cost /Quantity Surveyor	Quiz 2 (Materials, performance and details)
12	27 May	Passive Architecture and Building (case studies)	
13	3 Jun	Course Review; Student feedback	Assignment 3 (Technical Report)
Examination Period			
Examination Period			

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Online Quizzes	Quiz 1 is open from the 1st of April until the 7th of April at 11:55pm (10% weighting) Quiz 2 is open from the 20th of May until the 26th of May at 11:55pm (10% weighting)	Individual	20%	1, 2, 3, 6
2	Pictorial Report	2nd of May 2024 at 11:55pm	Individual	40%	2, 3, 4, 6
3	Technical Report	6th of June 2024 at 11:55pm	Individual	40%	1, 2, 3, 4, 5, 6

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Online Quizzes

Assessment Type Purpose

Quiz
On completion of this assignment the student should be able to:

1. Identify the performance attributes required for primary and secondary structural building elements.
2. Identify the structural performance, forces and environmental agents incumbent upon building structures.
3. Identify the logic of construction sequencing and materials performance and assembling of a given structure.
4. Assess relevant clauses of Australian Standards (AS) and National Construction Codes (NCC).

Description

This is an online, open book, multiple-choice test that will assess aspects of your understanding of construction concepts. You should therefore not attempt it until you are confident of your abilities. Please note that the mark shown in Gradebook will reflect your performance in those questions that you have undertaken within the 90-minute time limit. Questions undertaken outside that timeframe may not be included in this score. You will have the opportunity to retake the test once within the timeframe. You will not be able to partially complete the test and return to complete it at a later date.

Weighting

20% (10% per quiz)

Due Date

Quiz 1 is open from the 1st of April until the 7th of April at 11:55pm
Quiz 2 is open from the 20th of May until the 26th of May at 11:55pm

Submission Method

Online

Assessment Criteria

Both Quizzes will be multiple choice having none, one or more correct answers.

Return Method

Online

Feedback Provided

Online - Students will be able to identify their performance on completion of either quiz

Assessment 2 - Pictorial Report

Assessment Type	Report
Purpose	On completion of this assignment the student should be able to: <ol style="list-style-type: none">1. Identify the function of, and desirable performance attributes required for primary and secondary structural building elements.2. Qualitatively describe the structural performance, forces and environmental agents incumbent upon building structures.3. Qualitatively describe the link between structure, construction sequencing and material performance incumbent upon building structures.4. Identify, describe and draw a range of structural and sequencing details.5. Assess relevant clauses of Australian Standards (AS) and National Construction Codes (NCC).
Description	Please refer to the Assignment Brief on Canvas for details.
Weighting	40%
Due Date	2 nd of May 2024 at 11:55pm
Submission Method	Online Only digital submissions will be accepted via Turnitin, accessible via Canvas. Your Pictorial report is to be submitted electronically therefore in order to avoid difficulties in uploading, ensure the size of your submission has been reduced not to exceed 20Mb prior to submitting via Turnitin available on the Canvas site. Do not leave your submission to last minute as it may cause congestion on the server and your work may not be accepted and deemed late.
Assessment Criteria	A marking rubric will be available separately online on Canvas.
Return Method	Online
Feedback Provided	Online - Feedback will be made available within three weeks from the due date of submission. Feedback will be assessed against the Marking Rubric.

Assessment 3 - Technical Report

Assessment Type	Report
Purpose	On completion of this assignment the student should be able to: <ol style="list-style-type: none">1. Qualitatively describe the structural performance, forces and environmental agents incumbent upon building structures.2. Qualitatively describe the link between structure, construction sequencing and material performance incumbent upon building structures.3. Identify, describe and draw a range of design details.4. Evaluate design alternative in terms of buildability and material performance.5. Assess relevant clauses of Australian Standards (AS) and National Construction Codes (NCC).
Description	Please refer to the Assignment Brief on Canvas for details.
Weighting	40%
Due Date	6 th of June 2024 at 11:55pm
Submission Method	Online Only digital submissions will be accepted via Turnitin, accessible via Canvas. Your technical report is to be submitted electronically therefore in order to avoid difficulties in uploading, ensure the size of your submission has been reduced not to exceed 20Mb prior to submitting via Turnitin available on the Canvas site. Do not leave your submission to last minute as it may cause congestion on the server and your work may not be accepted and deemed late.
Assessment Criteria	A marking rubric will be available separately online on Canvas.
Return Method	Online
Feedback Provided	Online - Feedback will be made available within three weeks from the submission date. Feedback will be assessed against the Marking Rubric.

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods

Communication methods used in this course include:

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the [Oral Examination \(viva\) Procedure](#). In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the [Student Conduct Rule](#).

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to <https://policies.newcastle.edu.au/document/view-current.php?id=35>.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or

4. the course has a compulsory attendance requirement.
Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
<https://policies.newcastle.edu.au/document/view-current.php?id=236>

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at <https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures> that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

© 2024 The University of Newcastle, Australia