



Dept. of Civil Engineering | CPD Courses

Structural Engineering and Materials

Master's Modules 2021



Introduction



The Master's Programme: The programme offers high level training in structural design, structural analysis and structural materials by providing sound theoretical background and encouraging critical and innovative thinking. Students benefit from expertise in concrete technology, concrete durability, structural performance and design, computational mechanics and finite element analysis. The programme is supported by excellent laboratory and computing facilities and draws from cutting edge research including the in-house developed structural analysis software SESKA.

All programmes can be completed in a minimum of two years full-time or may be taken over an extended period of a maximum of five years.

CPD Courses: Four of these master's modules are offered as individual short courses in 2021. Continuing Professional Development students may take each module as a separate certificate course. CPD students are required to attend the lectures but are not required to submit assignments or write the exam.

Who Should Attend?

The programme has been designed to be accessible to people in full-time employment as well as full-time students. Applicants may register for the individual master's level courses offered by the programme as Continuing Professional Development students. These students will be awarded a Certificate of Attendance. University credits will not be awarded to these students. Courses are typically attended by consultants or government officials working within the Structural Engineering field.

Format

Please note: Each course is usually presented face-to-face over 3 – 5 days. Due to current COVID-19 protocols, it may be necessary to change the format of this course to an online format. Details will be supplied closer to the time.

Introduction to Finite Elements in Structural Analysis

CIV5142Z: 30 August – 3 September 2021

The course aims to introduce advanced students to finite element modelling theory, typical applications in structural engineering and recommendations. The topics include fundamental approaches and solution strategies in finite element modelling; linear and non-linear structural problems; different types of non-linearity in structural engineering; implication of the various mesh types including truss, beam, plate and shell elements; the effects of h and p mesh refinements and mesh quality; different types of structural supports including rigid supports, elastic bedding, kinematic constraint supports, the influence on stress distribution and recommendations of suitable application; different treatment of concentrated loads and distributed loads and the effect of mesh resolution

Convenor: A/Prof Sebastian Skatulla

5 CPD points, ECSA registration number: UCTSEMIFE21

Stability and Design of Steel Structures

CIV5112Z: 1 – 5 November 2021

This course aims to treat advanced topics in constructional steel work. The topics include elastic and inelastic buckling behaviour; plate buckling; non-linear instability behaviour of thin-walled structures, design for fatigue, design of steel-concrete composites, hybrid steel structures, steel connections plate girders, and the behaviour of steel structures under fire. Applications in industrial buildings and crane supporting structures are also addressed.

Convenor: Kenny Mudenda

5 CPD points, ECSA registration number: UCTSEMSDSS21

Plate and Shell Structures

CIV5100Z: 15 – 19 November 2021

This course aims to be a comprehensive treatment of plate and shell theories, and their application to the solution of various problems in structural engineering. Plate and Shell Structures Part A will cover plates subjected to bending and twisting (slope, curvature, twist, bending moments, transverse shears and twisting moments); the derivation of the bending equation for transversally loaded plates (rectangular and polar co-ordinates); solutions for rectangular plates and circular plates; practical applications; introduction to shell structures; the membrane hypothesis for shells; the membrane theory of axisymmetrically loaded shells of revolution; applications to the analysis of pressure vessels, liquid-containment vessels, domes and cooling towers.

Convenor: Prof Alphose Zingoni

5 CPD points, ECSA registration number: UCTSEMPAS21

Overview

Programme	Structural Engineering and Materials CPD courses
Modules and duration	Introduction to Finite Elements in Structural Analysis, CIV5142Z, 30 Aug – 03 Sept Stability and Design of Steel Structures, CIV5112Z, 01 - 05 November Plate and Shell Structures, CIV5100Z, 15 – 19 November
Venue	PG Seminar Room, NEB, Upper Campus, University of Cape Town or online
CPD	CPD points and ECSA codes as indicated per module
Fees	Standard fee, 5-day course: R14 200 Standard fee, 3-day course: R10 800

* If the course needs to be presented online due to Covid-19 restrictions, a 25% discount will apply to the standard fee only.

Registration

Registration and Cancellation

- [Register for this course](#)
- Registration covers attendance of all sessions of the course and course material.
- Registrations close one week before the start of the course. Confirmation of acceptance will be sent on receipt of a registration form.
- **Cancellations must be received one week before the start of a course, or the full course fee will be charged.**
- For more information on application and registration procedures, please visit our website: www.cpd.uct.ac.za

Certificates and CPD Points

A certificate of attendance will be awarded to CPD participants. Participants need to attend 80% of the lectures to qualify for an attendance certificate.

CPD participants can also request a formal university transcript, which will show this course as part of a Professional Development Career.

Please note: If you are interested in attending this course for credit purposes, you will need to register for the master's programme or as an occasional student. If you attend the course as a CPD participant, credit cannot be claimed in retrospect.

For further information on the master's programme please see the website:

<http://www.civil.uct.ac.za/transport-studies>

Contact details

For more information or details on CPD courses, visit our website or contact us.

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