



Dept. of Civil Engineering | Masters module | CPD course

Big Data Analytics and Transport

21 – 25 October 2024



Introduction

The Master's Programme

The master's programme offers degrees specialising in transport studies, with a specific focus on the planning and management of urban passenger transport systems. The primary aim is to produce graduates from a range of undergraduate disciplines with the necessary knowledge and skills to engage effectively with the challenge of creating affordable, efficient, sustainable, safe, equitable and environmentally sound urban transport systems, and to contribute to the implementation of new and demanding policy directives. Curriculum content is cross-disciplinary in orientation and exposes students to a broad range of the analytical, evaluative,

planning and management issues they are likely to encounter in the field. For further information on the master's programme please see the website: [Transport Studies | University of Cape Town \(uct.ac.za\)](https://transportstudies.uct.ac.za)

Continuing Professional Development

Modules of this master's programme are offered to Continuing Professional Development delegates. Eight individual block release modules are offered in 2024.

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

Applicants may register for the individual master level courses offered by the programme as Continuing Professional Development students.

The programme has been designed to be accessible to people in full-time employment as well as full-time students. The entrance requirements are as follows:

- Students who have been accepted into the MSc or MEng programmes in the EBE Faculty
- Professionals with a background in engineering, transport planning and technology-related disciplines like data science or engineering and computer science.

Format

Each module is structured in the following way: a week of intensive contact time at UCT, comprising formal lectures, class assignments and seminars/tutorials.

Please note: these courses are currently planned to be presented face-to-face over 5 days, but it may be necessary to change the format of a course to an online or hybrid format.



Course Content

This course aims to introduce students to the essential connection between planning and managing mobility systems and big data. It bridges the gap between big data, data science, and transportation systems analysis, focusing on how transport and mobility experts can draw meaningful insights from big data to make informed decisions about the management of mobility systems. Furthermore, the course introduces new techniques and advances in big data analytical frameworks, modelling paradigms and their applications to concepts in mobility analysis and transportation systems. The modules will cover types of transport data, big data capturing and warehousing, big data modelling and optimisation, big data analytics and prediction with machine learning techniques and visualising big data. Ultimately the course will help students bridge the gap between data analysis and decision making, providing the knowledge and tools to effectively interrogate transport data and understand what questions to ask to make informed decisions for the future.

Overview

Course	Big Data Analytics and Transport, CIV5164Z
Duration	21 – 25 October 2024
Venue	PG Seminar Room, NEB, Upper Campus, University of Cape Town or online
CPD	5 CPD points, ECSA registration number: <i>UCTTSPBDAT24</i>
Fees	Standard fee: R16 500 (5-day course)* UCT student fee: R8 250
Transport CPD courses	Transport Modelling: 5 - 9 Feb 2024 Transport Demand Analysis and Project Assessment: 8 – 12 Apr 2024 Integrated Land Use-Transport Planning: 20 – 24 May 2024 Non-Motorised Transportation: 3 - 7 Jun 2024 Management of Transport Supply and Demand: 2 – 6 Sep 2024 Public Transport System Design and Management: 7 – 11 Oct 2024 Big Data Analytics and Transport: 21 – 25 Oct 2024 Public Transport Policy and Regulation: 18 - 22 Nov 2024

*10% discount will apply if the course is attended online (only if available online)

Course Presenters



Obiora Nnene is a senior lecturer in UCT's Department of Civil Engineering, specialising in transportation planning and engineering. He previously worked as a highway design engineer in road design and infrastructure provision and is passionate about improving transportation systems using data-driven approaches. His research interests are big data applications in transport, public transport network design and optimisation, agent-based transport modelling, transport emissions, and energy modelling. He teaches courses in urban transportation engineering and transportation planning at the undergraduate and postgraduate levels. He has also been involved in many projects focused on improving transportation systems.



João Paolo Costeira is an Associate Professor at Instituto Superior Técnico, University of Lisbon, and a researcher at the Institute for Systems and Robotics (ISR), where he leads the Signal and Image Processing Group. His research primarily focuses on visual recognition and 3D reconstruction from images, particularly on applications in urban environments. He served as the national director of the dual PhD program in Electrical and Computer Engineering (ECE) and Robotics (2007-2018), a collaboration between the Portuguese government and Carnegie Mellon University (cmuportugal.org). Additionally, he served as the scientific director of this partnership from 2012 to 2018, during which time he supervised the completion of five dual PhDs. His collaborative work with Carnegie Mellon University led to the development of advanced technologies for urban traffic monitoring, for which he holds a joint IST/CMU US patent and a Republic of China patent related to vehicle counting technologies. Most recently, he provided expert support to the Portuguese Institute for Mobility and Transport (IMT) in auditing a public concession contract for a metro system using "on board" camera networks.

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 registration 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.

Contact details

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

Web: www.cpd.uct.ac.za

Email: ebe-cpd@uct.ac.za

Physical address
CPD Programme
Room 6.10, 6th Floor
New Engineering Building
Upper Campus
University of Cape Town
South Africa

Postal address
CPD Programme
EBE Faculty
University of Cape Town
Private Bag X3
Rondebosch 7701
South Africa

Programme administrators
Gillian Williams: +27 (0)21 650 7239
Sandra Jemaar: +27 (0)21 650 5793
Heidi Tait: +27 (0)21 650 4922