SHORT COURSE: FOUNDATION DESIGN

DEPARTMENT OF CIVIL ENGINEERING • 5 days • 14 - 18 July 2025

COURSE PRESENTER

Prof Peter Day
Extraordinary Professor of Geotechnical Engineering & Consultant, Jones & Wagener

FEES

5-day course: R12,000

ECSA CPD POINTS: 5

PLEASE NOTE:
Only **DIGITAL** certificates will be issued

LANGUAGE

The course will be presented in English.

COURSE CONTENT

Page 2-3

CONTACT

Janine Myburgh
021 808 2080
civilcourses@sun.ac.za

OBJECTIVES

This course is presented from the perspective of a practicing geotechnical engineer.
The objective of this course is to provide a practical understanding of:

- Extending the theories of bearing capacity and settlement as taught at undergraduate level to practical design of foundations
- Obtaining and selecting design parameters from site investigation data
- Selection of appropriate foundation types for various types of development and soil profiles
- Design of spread footings, piled foundations and raft foundations
- Application of limit states principles to design of foundations

OUTCOMES

At the end of the course, the participants should be able to:

- Define and specify site investigation requirements for types of development and soil conditions
- Select appropriate methods of design for common types of foundations
- Determine the load bearing capacity and settlement of foundations
- Better understand practical issues that need to be considered in foundation design

COURSE ARRANGEMENTS

This course will be presented in **hybrid** mode: (Face-to-face on the Stellenbosch Campus & Online). Venue details will be forwarded to registered delegates once payment has been received.

CLICK HERE TO REGISTER

REGISTRATIONS

Registrations close and all payments are due by 30 June 2025

Payment confirms registration.

Stellenbosch UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Course Content

Topic	Subject matter
Foundation Types	Types of foundations in common use in South Africa • Spread footings • Various types of piled foundations • Raft foundations Selection of appropriate foundation types for various developments and soil profiles
Site Investigation and Soil Properties	Desk study • Sources of information • Geological maps, Google Earth, air photo interpretation • Site walkover Fieldwork • Common methods of investigation • Geophysical methods • Soil sampling for laboratory testing • Common in-situ testing methods and their limitations • Other field tests. Determination of soil properties • Soil properties relevant to various ground and foundation types • Soil classification tests • Soil characterisation tests • Soil and rock strength tests • Soil and rock compressibility.
Analysis and Design of Spread Footings	Design approaches (WLD and LSD) Bearing capacity of shallow foundations • Review of design methods for drained and undrained soils • Influence factors (shape, depth, load inclination, etc.) • Load eccentricity • Factors of safety for WLD • Determination of design parameters • Factors affecting bearing capacity • Design examples using WSD and LSD Settlement of spread footings • Components of settlement (elastic, consolidation, creep, collapse) • Methods of settlement calculation • Simplified methods • Creep settlement • Non-linear stress-strain behavior of soils • Determination of stiffness parameters from laboratory, field and in situ tests Design examples

Basic design of raft foundations	Typical applications of raft foundations Types of foundation rafts (slab on grade, stiffened rafts, waffle rafts) Design criteria for heave and collapse Lytton's method for heaving soils
Deep Foundations	Types of deep foundations and applications Design of piled foundations • Load capacity of piles and pile groups • Settlement of single piles and pile groups • Laterally loaded piles • Basic concepts in pile group design
Subgrade Reaction	Modulus of subgrade reaction Beam on elastic foundation methods v analysis of elastic continua.
Limit States Design using SANS 10160-5 Note: Overview only – covered by Advanced Geotechnics course	Parameter selection Bearing capacity Settlement Piles
Statutory Requirements and Applicable Standards	• Township investigations (SANS 634) • Dolomite investigations (SANS 1936-2, SANS 633) • National Building Regulations (SANS 10400A, B & H) • Bases of Design (SANS 10160-1 and SANS 10160-5) • Construction Regulations