Advanced Structural Steel Design

STELLENBOSCH
20-24 May 2024

1 CPD POINT per day
R10,000 5 day attendance
R5 000 2 day attendance

Hybrid presentation **on Teams, with limited seats available for in-person attendance**

Stellenbosch UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

COURSE OUTLINE

Day 1 – Introduction focuses on understanding the practice of structural engineering and the nature of the local steel industry. Attendees who are familiar with Limit States Design from prior classes are introduced to the underlying basis for this approach. The class will delve into useful theories of plasticity in mechanics that form the basis for how Limit States Design standards are developed and structural engineering practiced. Moreover, the session covers topics covering the manufacturing, rolling, fabrication and assembly of standardized structural steel components that are used in the construction of a variety of structures. The aim of this session is to introduce attendees to the state of the art in structural engineering and link that knowledge to the advanced materials and technologies that are available to execute complex construction projects.

Day 2 – Industrial Buildings introduces the design and construction of manufacturing and warehouse buildings. These structures are crucial to the manufacturing and retail industries and almost always constructed using structural steel. Attendees will be introduced to key architectural, structural and construction issues as they pertain to such structures. The aim of this session is to provide attendees with the knowledge and reference material that can be used to go to industry and design (and oversee the construction of) manufacturing and warehouse structures that are cost effective and compliant with South African building regulations.

Day 3 – Composite Buildings introduces composite building design. Attendees will be introduced to a method of design and construction which combines structural steel and concrete to remove most or all requirements for temporary works during construction. This is one of the innovations in construction that has significantly affected speed and safety over the past few decades. While this method of construction is also applied to bridges, power plants and other structures, the session will focus on multi-story buildings as a useful way to introduce the pertinent concepts. The aim of this session is to provide attendees with the knowledge and reference material that can be used to go to industry and design (or oversee the construction of) composite structures in a variety of applications.

Days 4 and 5 – Steel Connections present the design and detailing of structural steel connections. Attendees will be introduced to what is arguably the most important aspect of structural steel design and construction. Connections have a significant effect on the safety and cost of steel structures. The sessions will draw on topics covered in the prior three sessions to introduce attendees to standard connection types and how careful selection and design of connections affect fabrication and erection quality and cost. Moreover simplified techniques of connection design will be introduced for complex connection types. The aim of these sessions is to utilize steel connections as a way to illustrate the state of the art in structural steel design and construction. Various topics from software to quality will be addressed in these sessions in order to tie the whole course together

PRESENTER

Amanuel Gebremeskel is CEO of the Southern African Institute of Steel Construction (SAISC) since 2022, having joined SAISC in 2011.as Development Engineer and promoted to Technical Director in 2016. He holds engineering and MBA qualifications from the University of Minnesota and Carlson School of Management. Amanuel has more than 23 years of structural engineering experience with consulting engineering companies, as Senior Engineer with the American Institute of Steel Construction (AISC) and SAISC. He has successfully presented courses in structural steel design at WITS and SU.

FACILITATOR

Gideon van Zijl: Professor of Structural Engineering in the Department of Civil Engineering at SU will facilitate on-site during the presentation of the course.

COURSE PROGRAMME

DAY	TOPIC	
Day 1	**Introduction: Theory of design** Steel making and nomenclature The steel contractor Design philosophy Introduction to steel structural design	20 May 2024
Day 2	**Design of Industrial Buildings** Industrial building layout Portal frames Bracing purlins and girts Light industrial building design example	21 May 2024
Day 3	**Design of Composite Buildings** Introduction Composite beams Composite floors Responsibilities for quality control Fire resistance Introduction to seismic design	22 May 2024
Day 4	**Design of Structural Steel Connections: Design basics** Introduction Bolts Bolts in connections Welds Welds in connections Elements in connection	23 May 2024
Day 5	**Design of Structural Steel Connections: Connection design** Simple connections Moment connections Semi-rigid connections Splice connections Bracing connections Base connections Embed connections	24 May 2024

Daily schedule 08:30-16:00 with short comfort and lunch breaks.
Reading material will be available online for all participants.
A daily online quiz is completed to enhance the learning experience and confirm attendance.

CPD CREDITS

The seminar is accredited for **1 ECSA Continued Professional Development (CPD)** credit per day.

PLEASE NOTE: Only digital certificates will be issued

REGISTRATION (PLEASE READ THE T's & C's)

5 day course: CLICK HERE TO REGISTER

2 day course: CLICK HERE TO REGISTER

Registrations close: 10 May 2024

PAYMENT

FEES: **R10 000 for 5 days**
R5 000 for 2 days

PLEASE EMAIL YOUR PROOF OF PAYMENT TO:

JANINE MYBURGH

EMAIL civilcourses@sun.ac.za

ENQUIRIES 021 808 2080

Payment confirms registration

All payments are due: 15 May 2024

WE LOOK FORWARD TO WELCOMING YOU AT THE COURSE!