

Fire Design of Concrete and Timber Structures to Eurocode 2 and Eurocode 5

INTRODUCTION

The performance of buildings under fire condition has attracted significant attention in recent years. This course will provide participants with the essential background for fire design of concrete and timber structures. Both behaviour and design aspects related to ambient and structural fire design of concrete and timber structures will be covered.

OBJECTIVES

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

- Understand the provisions in Eurocodes for fire design of concrete, composite and timber structures
- Understand the basic principles and design aspects of wood related to ambient design of timber structures
- Learn the Eurocode 2 and Eurocode 5 applicability of ambient and fire design provisions in practical scenarios

CONTENTS

DAY 1

- Introduction to Fire Safety and General Presentation of the Eurocodes
- Eurocode 1 - Actions in Case of Fire
- Introduction to Timber Design: General Principles
- Eurocode 5 for Timber Structures: Timber Design at Ambient Conditions
- Eurocode 5 for Timber Structures: Timber Design under Fire Conditions

DAY 2

- Eurocode 2 material properties of concrete and reinforcement under fire effects
- Eurocode 2 for Concrete Structures: prescriptive requirements and Structural Fire Design through Tabulated Data
- Eurocode 2 for Concrete Structures: Structural Fire Design through Simplified Methods
- Eurocode 2 for Concrete Structures: Structural fire design of columns and beams
- Improving fire resistance of HSC materials
- Strategies for enhancing fire resistance of modern concrete structures

LECTURERS

DR VENKATESH KODUR, *Ph.D., P.E., F.ASCE, F.ACI, F.SEI, F.CAE, F.INAE*

Dr Venkatesh Kodur is a Professor and Chairperson in the Department of Civil & Environmental Engineering and also serves as Director of the Center on Structural Fire Engineering and Diagnostics at the Michigan State University, USA. Dr Kodur's research focuses on the experimental behaviour and analytical modelling of structural systems under extreme fire conditions and constitutive modelling of material properties at elevated temperatures. He develops guidelines for fire design of structural systems, and evaluates fire performance of high performing materials and performance based fire safety design. Dr Kodur also conducts building collapse investigations. He has published over 350 peer-reviewed journal and conference papers in Structural and Fire Engineering fields and invited to deliver numerous keynote presentations. Dr Kodur was part of the FEMA/ASCE Building Performance Assessment Team that studied the collapse of the World Trade Center buildings in New York as a result of the September 11, 2001 incidents.

DR TAN KANG HAI, *BSc(Eng), PhD, PEng, MIES, MASCE*

Dr Tan Kang Hai is Professor of Structural Engineering in the School of Civil and Environmental Engineering, NTU. He is concurrently the Co-Director of Transport Research Centre and Director of Protective Technology Research Centre in NTU. Prior to joining NTU, he worked in Ove Arup & Partners, UK. He is a registered Professional Engineer in Singapore. He works on numerical simulations of the fire effects on structures and experimental testing of sub-assemblies using electrical heating furnaces. Since 1996, he and his research team have developed finite element software FEMFAN3D to be used for progressive collapse analysis of structures. He also served as Chairman of a few task force groups on Structural Eurocodes relating to structural fire applications. He has been regularly conducting professional short courses and seminars on Eurocodes for reinforced concrete and steel structures and Structural Fire Engineering in Singapore, Hong Kong and China. He has authored about 150 SCI international journal papers and 178 international conference articles on structures. In 2014, he received a SGD\$6 million research grant on "Life Safety and Structural Fire Safety of Mega Underground Caverns in Singapore" from the Ministry of National Development.



DETAIL

3rd Run: To be advised

Duration: 2 days

Time: 9.00am to 5.30pm

Venue: BCA Academy

Fee (incl of GST): S\$850.00

(Lunch and refreshments will be provided)

AWARD

Certificate of Attendance will be awarded to participants who meet the attendance requirement.

CPD POINTS

PEB: Pending

BOA-SIA: Pending

SCDF: Pending

TARGET AUDIENCE

Fire Safety Engineers, Structural Engineers, Architects, M&E Engineers/Designers and Builders

To register, log on to our Online StoreFront (OSF) at:

<https://eservices.bcaa.edu.sg/registration/#/login> or scan QRcode and search for course code **79095**

