## Registration and fees

The course runs as an intensive Meng/MSc module, and as a CPD course.

The fee for the whole course, including course materials in the form of notes, Powerpoint presentations and a collection of Excel spreadsheets, lunch and tea/coffee over all three days, is £780.

If you wish to attend for less than the 3 days of lectures the fee is £280 per day. Either includes hands-on practice using spreadsheets to conduct Eurocode-based element fire resistance design, as well as more advanced methods.

**Please register online** at *onlineshop.shef.ac.uk*

Then navigate to *Conferences and events > Faculty of Engineering > Civil and Structural Engineering*

**Course Fees: £780 for full course or £280 per day**

## Further Information

We can provide a list of accommodation for anyone wishing to stay in Sheffield. If you would like accommodation details, or if you have any other non-technical queries, please contact

Pat Rayner,
Department of Civil & Structural Engineering,
Sir Frederick Mappin Building, The University of Sheffield,
Mappin Street, Sheffield S1 3JD.

*(Tel: 0114 222 5758 Fax: 0114 222 5793, email p.rayner@sheffield.ac.uk)*

For technical details contact Ian Burgess *(ian.burgess@sheffield.ac.uk)* or Shan-Shan Huang (s.huang@sheffield.ac.uk).

The University Of Sheffield.

CPD course

# Fire Engineering Design of Structures

## 21, 28 March & 4 April 2019

Department of Civil & Structural Engineering
University of Sheffield

# FIRE ENGINEERING DESIGN of STRUCTURES

**21st and 28th March, 4th April 2019**

## Course Outline

The course will provide an overview of the fire hazard in buildings and the measures necessary for life safety and containment of losses. General structural requirements will be reviewed, and the response of steel structures in particular will be discussed. In addition to an evaluation of traditional design approaches, new design strategies will be discussed, including references to the Fire Engineering parts of the structural Eurocodes. These approaches will be supported by the evidence of relevant research including the results of full-scale fire testing at Cardington. Advanced methods of analysis and simulation, and the influence of various parameters will be discussed. Likely future developments will be reviewed, including measures to ensure robustness in fire.

The concept of structural safety, and in particular how we design for extreme conditions, has come under examination since the collapse of the twin towers of the World Trade Center, as well as in recent major fires in the UK. The role of fire engineering in this context will clearly be important, and it is likely that structural engineers will need to be more familiar with the principles of fire safety for future building design. This course provides an essential grounding in the subject.

## Who should attend?

The course will be of use to structural engineers, building control authorities and others involved in ensuring fire resistance of buildings, who wish to understand the background and principles of structural fire engineering, particularly in the context of the considerable advances in the state of the art which have taken place over the past two decades.

## Programme

### First Day

- Introduction
- The UK legal requirements
- Building fires and introduction to Eurocode structural fire engineering
- Fire protection & testing, prescriptive fire protection
- Design fires; basis and selection
- Hands-on session on design fires

### Second Day

- Eurocode 3 Fire design for steel structures
- Eurocode 4 Fire design for composite structures
- Eurocode 2 Fire design of concrete structures
- Eurocode 5 Fire design of timber structures
- Fire engineering design in practice
- Hands-on session on Eurocode design of steel and composite structures

### Third Day

- The Cardington full-scale fire tests & whole structure behaviour
- Post-Cardington design guidance and performance-based design
- Advanced calculation approaches
- Robustness case study: The collapse of "Seven World Trade"
- Hands-on session on composite floor design using tensile membrane action

## The Speakers

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|---|---|
| Ian Burgess | Civil & Structural Engineering, University of Sheffield |
| Shan-Shan Huang | Civil & Structural Engineering, University of Sheffield |
| Danny Hopkin | Olsson Fire & Risk UK |
| Roger Plank | Vulcan Solutions Ltd |
| Jenny Burridge | Concrete Centre |