

Faculty of Engineering
and Physical Sciences



UNIVERSITY OF LEEDS

Fire Dynamics and Modelling

Monday 19 – Friday 23 September 2022



**15% DISCOUNT
FOR IFE MEMBERS**

Fire Dynamics and Modelling

Monday 19 – Friday 23 September 2022

Course Director

Dr Roth Phylaktou, School of Chemical and Process Engineering, University of Leeds

About the course

This course helps delegates to understand the mechanisms and dynamics of fire development from a fundamental scientific level helping you to design safer systems, buildings and processes that protect life and property more effectively whilst allowing greater freedom in design.

The course follows a structured approach starting from the general fundamental principles of combustion flammability and heat transfer and moving onto the more specific study of fire spread and fire development in compartments. We will also cover open fires such as pool and jet fires. During the course we will discuss the principles of fire protection practice and technology within the context of understanding the fire development mechanism and the response of structures to fires. Your learning experience will be enhanced through worked examples and brief problems that you will be asked to attempt on your own or in groups (so please bring a calculator with you). On the last day of the course there will be the opportunity for some hands-on experience with predictive PC packages.

Course Accreditation

The Fire Dynamics and Modelling CPD course, Leeds, has been approved for 32 CPD hours in total by the Institution of Fire Engineers (IFE).

Learning objectives

On completion of this course, delegates should be able to: apply general combustion and engineering principles to fire; know the parameters that influence flame spread and steady burning; quantify the burning rate in compartment fires; predict the rate of development of the fire and the onset of flashover; appreciate the application of these concepts to fire protection design; understand the factors influencing smoke toxicity and movement. Delegates will be made aware of the predictive tools that are available and should become familiar with the application and use of such tools.

Who should attend

Anybody who wishes/needs to gain a comprehensive, scientifically based analysis and engineering quantification tools of fire development and consequence assessment in industrial and residential scenarios. This could include those involved in the design and operation of buildings and chemical plant (architects, civil engineers, chemical engineers), and in the design of protection systems (passive and active system developers, manufacturers, installers), those responsible for building and plant safety on a day to day basis, regulators and advisors (HSE, Fire Service, Home Office, Local Authorities, Building Control Offices, Consultants, Insurers) and fire-fighting professionals. Additionally, young researchers may find this course very useful.

What our previous delegates say:

“A well thought out, relevant and interesting course”
BAE Systems

“Excellent short course. There are few similar courses in Europe”
VSB – Technical University of Ostrava

“An excellent course for providing a balance between understanding the basic principles of fire science/dynamics and more in-depth practical applications. Thoroughly recommended”
Kingspan

Programme

Monday 19 September 2022

Fundamental Processes

08.30 Registration and coffee

09.00 Physical concepts

Dr Roth Phylaktou

10.15 Coffee

10.30 Fuel and combustion processes and fundamentals

Dr Roth Phylaktou

12.15 Lunch

13.00 Limits of flammability

Dr Roth Phylaktou

14.15 Heat transfer: conduction and convection

Dr Roth Phylaktou

15.30 Tea

15.45 Heat transfer: conduction and convection (continued)

Dr Roth Phylaktou

16.45 End of day one

Tuesday 20 September 2022

Radiation, Ignition and Flame Spread

08.45 Registration and coffee

09.00 Radiation from fires

Dr Roth Phylaktou

10.20 Coffee

10.35 Radiation from fires (continued)

Dr Roth Phylaktou

12.25 Lunch

13.10 Ignition

Dr Roth Phylaktou

14.40 Tea

14.55 Spread of flame

Dr Roth Phylaktou

15.45 Fire combustion products and toxicity as a function of ventilation conditions

Professor Gordon Andrews, University of Leeds

17.00 End of day two

19.00 Course dinner

Wednesday 21 September 2022

Pool Fires, Jet Fires and Cloud Fires

08.45 Registration and coffee

09.00 Steady burning diffusion fires

Dr Roth Phylaktou

10.00 Coffee

10.15 Pool fires in the open

Dr Roth Phylaktou

11.15 Gaseous Jet Flames

Professor Derek Bradley, University of Leeds

12.00 Radiation from flames

Dr Roth Phylaktou

12.40 Lunch

13.25 Example calculations: radiation flux from flare on escape route

Dr Roth Phylaktou

14.00 Pool and jet fires, large scale tests

Rob Crewe, DNV GL

15.20 Tea

15.35 Pool and jet fires in compartments

Professor Geoff Chamberlain, Consultant, Waverton Consultancy Ltd, previously Shell Global Solutions (UK)

16.20 Cloud fires

Peter Rew, ATKINS

17.20 End of day three

Thursday 22 September 2022

Compartment Fires

08.45 Registration and coffee

09.00 The growth period

Dr Roth Phylaktou

10.30 Coffee

10.45 Flashover

Dr Roth Phylaktou

12.45 Lunch

13.30 The post-flashover period and backdraughts

Dr Roth Phylaktou

15.00 Tea

15.15 Fire performance of structures

Dr Florian Block, BuroHappold Engineering

16.00 Smoke movement

Dr Roth Phylaktou

17.15 End of day four

Friday 23 September 2022

Compartment Fire Modelling

08.45 Registration and coffee

09.00 Using CFD models

Jeremy Ockenden, Affinity Fire Engineering

10.15 Coffee

10.30 Fire Behaviour and Modern Buildings

Ben McColl, OFR Consultants

11.45 A zone model in detail – CFAST

Dr Roth Phylaktou

12.35 Lunch

13.20 Transport to the University of Leeds

The afternoon ‘hands on’ session will be held in the computer cluster

13.35 Hands on experience with a zone model

Dr Roth Phylaktou

16.05 Return transport to Weetwood Hall Estate

16.20 Tea and issue of attendance certificates

16.35 End of day five and course

View the full programme and book your place online at <http://eps.leeds.ac.uk/short-courses>

Please note, although we remain devoted to the programme specified, we reserve the right to vary the programme in detail if required to do so by factors beyond our control.

Further information

Course Fees

The following course fees include the cost of tuition, course materials, lunches and light refreshments for the days of attendance:

Full five days **£1695** any one day **£435**

15% discount for Institution of Fire Engineers (IFE) members.

Delegates are responsible for their own evening meals except on Tuesday 20 September when the course dinner is included.

Venue

The course venue will be Weetwood Hall Estate which offers first-class hotel facilities, a business centre and ample parking facilities. Weetwood Hall Estate is ideally situated 15 minutes north of the centre of Leeds. Further details can be found at www.weetwood.co.uk

Accommodation

To book accommodation at Weetwood Hall Estate, please contact Emma Barker E: reservations@weetwood.co.uk or T: +44 (0)113 230 6000 quoting 'CPD' and the Fire Dynamics and Modelling course.

The below rates are for a superior double room and include VAT:

Sunday evening, bed and breakfast **£85**

Monday – Thursday evening, bed and breakfast **£89**

Please book your accommodation at least two weeks before the course commences to guarantee rates and availability. A list of alternative hotels is available on request.

Course dinner

The course dinner will be held at a Leeds city centre restaurant and is included in the course fee. This will take place on Tuesday evening and transport from and to Weetwood Hall Hotel is provided. The dress code is smart casual.

How to Book

Please book your place for this course through our secure Online Store, using debit or credit card, following the instructions below:

1. Visit our Online Store at: <http://store.leeds.ac.uk>
2. Select Conferences and Events in the left-hand navigation bar and 'CPD Faculty of Engineering and Physical Sciences'
3. Select the relevant course, click on 'Book Event' and complete your booking details

You will receive an automatic confirmation email within 24 hours of your booking.

Get in touch

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E: cpd@engineering.leeds.ac.uk

W: <https://eps.leeds.ac.uk/short-courses>

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 [CPD, Conference and Events Unit,
University of Leeds](https://www.linkedin.com/company/CPD-Conference-and-Events-Unit-University-of-Leeds)

Terms and conditions for booking

Payment

Payment by debit/credit card should be made at the time of booking via the Online Store. If for exceptional reasons you are unable to book and pay online a purchase order document will be required to support a manual booking process. Our standard payment terms are 30 days from date of invoice however payment must be made prior to attendance. Attendance may be refused if payment has not been received.

Changes made by the University of Leeds

The course programme may have to be re-scheduled or the speakers changed for reasons outside our control. The University of Leeds reserves the right to cancel or postpone a course, in which case fees will be refunded in full. In the event of cancellation, the University will not be held liable for delegates' travel or accommodation expenses.

Where a delegate cancels a registration

For cancellations made within seven days of booking: a full refund is payable unless the course starts within the next seven days, in which case the full fee is payable and no refunds will be made.

For cancellations made after seven days of booking: written cancellations received up to 15 working days before the course will be subject to an administrative charge of 20% of the total fee. Within 15 working days of the course the full fee is payable and no refunds will be made.

For non-attendance: the full fee is payable and no refunds will be made. Appropriate course materials will be sent to the registered delegate.

In the event of cancellation, the University will not be held liable for or refund any incurred travel or accommodation expenses. Substitutions may be made at any time.

Data/Privacy

Your right to privacy is important to us. We will only use your information to provide information on our CPD courses and relevant events. We will not pass your details on to any other organisations. The ways in which your personal data may be used when you provide it to us are defined in our Privacy Notice at <https://eps.leeds.ac.uk/privacy>.

If you have opted in to receive details of future CPD courses from us you can unsubscribe at any time by emailing us at cpd@engineering.leeds.ac.uk and your details will be removed from our database.



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