Fire and Explosion Investigation

Monday 25 – Friday 29
September 2017

15% discount for IFE Members
The total monetary cost of fire and explosions (of losses and safety provision) in the UK is estimated at £12 billion per year or of the order of 1% of GDP and this is typical of the financial cost of fire in developed countries across the globe. Loss of life in fires is commonplace and can be in large numbers, as in the Rhode Island nightclub fire, the Rose Park Care Home fire, the Lakanal House tower block fire and recently the Grenfell Tower fire disaster.

Fire investigation carried out correctly is a most important tool for:
- determining the cause of the fire, the mechanism of fire spread and assess liability and where appropriate underpin and safeguard the integrity of resultant civil and/or criminal prosecutions
- improving public safety (by revealing the weak points in our current practices in prevention, suppression, mitigation and building design)
- reducing social, economic and environmental losses.

How can you be sure that you have got it right?
Fire investigators face a unique competency challenge. How many other professionals must routinely testify in court as to how they reached their conclusions? Mistakes can have serious implications.

As the legal climate for fire investigation becomes more demanding, the need for a rigorous scientific foundation is growing. A competent investigator should have in-depth knowledge (and experience in applying this knowledge) in order to recognise the clues and evidence at the fire scene, collect, test, analyse and interpret it. For a sound conclusion the whole process must be based firmly on scientific principles and methodologies and be guided by the legal framework.

Intended Audience
Our target audience is the national/international community of stakeholders in fire investigation. These include fire fighters/investigators, forensic scientists, public prosecutors, coroners, police, scene of crime officers, health & safety executives, insurers, local authorities, fire safety and security consultants.

What will you get out of this course?
This course aims to provide a large part of the scientific knowledge and understanding needed in Fire Investigation within the framework of relevant legislation. The course will provide a mix of lectures and a large range of case studies/scenarios, many of which are given by the person who investigated the incident.

Example calculations and scientific analyses and case-studies will be used by the speakers to demonstrate clearly the application and significance of science principles in fire investigation. The syllabus of the course covers the breadth and far exceeds the depth of the subjects required for the IFE membership Examination Paper: Fire Investigation.

Delegates will receive substantial course materials to take away. Not all the notes will be covered during the lectures due to time constraints; these will be included as additional reading materials.

Course Directors
Professor Gordon Andrews and Dr Roth Phylaktou
School of Chemical and Process Engineering

Course accreditation
The Fire and Explosion Investigation CPD course has been approved for 33.5 CPD hours in total by the Institution of Fire Engineers (IFE).

The Energy Institute has approved the University of Leeds – Faculty of Engineering as an Approved Training Provider.

MSc option
This course is accredited by the University of Leeds to form part of an MSc Masters programme (full time or part time) in Fire and Explosion Engineering. Modules of this MSc may also be taken individually or as part of a coherent course to meet personal needs for Continuing Professional Development. For more information on the MSc please visit the website at engineering.leeds.ac.uk/fire

Other Fire Engineering courses offered:
- Fire Dynamics and Modelling, Monday 23 - Friday 27 October 2017
- Fire Safety Design, Monday 27 November - Friday 1 December 2017
- Gas, vapour and dust Explosion Hazards, prediction, mitigation and protection, 2018 dates to be confirmed
**Programme**

**MONDAY 25 SEPTEMBER 2017**
Principles of Fire Investigation with Case Studies

08.30 Registration
09.00 Introduction
Dr Roth Phylaktou, University of Leeds
09.15 Legal implications of fire investigation
Dave Winspear, Fire Investigation Officer
10.15 Coffee
10.30 Management of fire investigation and collection of information
Graham Saward, Consultant and Paula Saward, Consultant
12.30 Lunch
13.15 The effects of fire fighting operations on fire investigations
Dave Winspear, Fire Investigation Officer
14.15 Heat transfer, ignition and flame spread
Dr Roth Phylaktou, University of Leeds
15.15 Tea
15.30 Burning rates, fire plumes
Dr Roth Phylaktou, University of Leeds
17.00 End of day one

**TUESDAY 26 SEPTEMBER 2017**
Fire Science and Engineering Fundamentals

08.45 Registration
09.00 Electrical fires
Dr Peter Jowett, Dr J H Burgoyne and Partners
10.00 Coffee
10.15 Fire investigation case studies – lessons learned
Professor David Purser, Hartford Environmental Research
11.30 Forensic pathology as an aide to fire investigation
Professor David Purser, Hartford Environmental Research
12.45 Lunch
13.30 Compartment fires
Dr Roth Phylaktou, University of Leeds
14.45 Tea
15.00 Stoichiometry, passive fire protection and air supply, fire load, estimation of fire heat release
Professor Gordon Andrews, University of Leeds
16.30 Laboratory analytical techniques for the detection of accelerants used in arson fires
Professor Gordon Andrews, University of Leeds
17.15 End of day two

**WEDNESDAY 27 SEPTEMBER 2017**
Post Fire Data Analysis and Modelling and its use in Fire Protection

08.45 Registration
09.00 Fire investigation as a source of data for safety design
Ahmed Maani, Arup Fire
10.15 Coffee
10.30 Fire investigation as a source of data for safety design continued...
Speaker to be confirmed
12.00 Lunch
13.00 Fire modelling in support of fire investigation with case studies
David Crowder, BRE Global
14.15 Fire Investigation scenario tutorial (includes analysis of some of the issues relating to the Grenfell Tower fire)
Led by Dr Roth Phylaktou
15.15 Tea
15.30 Fire Investigation scenario tutorial (continued)
17.00 End of day three

**THURSDAY 28 SEPTEMBER 2017**
Specialist Fires

08.45 Registration
09.00 Fire and explosion experience in industrial and commercial fires
Professor Gordon Andrews, University of Leeds
10.00 Coffee
10.15 Vehicle Fire Investigation
James Acott, Fire Investigations (UK) LLP
11.15 The interaction of insurance with fire investigation
Russell Kirby, FM Global
12.30 Lunch
13.15 Spontaneous ignition
Professor Gordon Andrews, University of Leeds
14.15 Hickson and Welch fire and other case studies
Dr Ken Patterson, Kent Patterson Process Safety
15.45 Tea
16.00 Vapour/gas explosion fundamentals with case studies including fuel tank vapour explosions
Professor Gordon Andrews, University of Leeds
17.30 End of day four

**FRIDAY 29 SEPTEMBER 2017**
Explosion Investigation

08.45 Registration
09.00 Types of explosions
Alan Mitcheson, Dr J H Burgoyne and Partners
10.30 Coffee
10.45 Bleves
Professor Geoff Chamberlain, Waverton Consultancy Ltd, previously Shell Global Solutions (UK)
11.30 Hazardous Area Classification - principles and pitfalls
Steve Sherwen, RPS Risk Management
12.30 Lunch
13.15 Explosion investigation incidents
Gary Tomlin, DNV GL
14.15 Electrostatic ignition hazards
Dr Jeremy Smallwood, Electrostatic Solutions Ltd
15.15 Tea
15.30 Explosion investigation: estimation of overpressures from structural damage and missile path length
Dr Roth Phylaktou, University of Leeds
16.30 End of day five and course

What our previous delegates say:

“An excellent insight into the world of fire investigation. Full of case histories and experiences from leaders in the fire investigation field”

“A thorough overview of fire and explosions in buildings relating to both process and plant. Lots of detailed information about past incidents, the subsequent investigations and the lessons to be learnt”

A full programme including detailed presentation descriptions can be viewed online at [www.engineering.leeds.ac.uk/short-courses](http://www.engineering.leeds.ac.uk/short-courses)
Administration details

Venue
The venue for the course will be Weetwood Hall Conference Centre and Hotel which offers first-class hotel facilities, a business centre and ample parking facilities.

Weetwood Hall Hotel is ideally situated 15 minutes north of the centre of Leeds in wooded grounds at the junction of the Otley Road and the outer ring road. It is just 15 minutes from Leeds Bradford International Airport and a short distance from the A1, M1, M606, M621 and M62 motorways.

Further details can be found at www.weetwood.co.uk

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full five days</td>
<td>£1595</td>
</tr>
<tr>
<td>One day</td>
<td>£410</td>
</tr>
</tbody>
</table>

**IFE members**
Delegates who are a member of the Institution of Fire Engineers (IFE) will receive a 15% discount on the course fee. Please indicate when booking if you are a member, stating your IFE membership number.

<table>
<thead>
<tr>
<th>Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFE member full five days</td>
<td>£1355.75</td>
</tr>
<tr>
<td>IFE member one day</td>
<td>£348.50</td>
</tr>
</tbody>
</table>

Accommodation
Bed and breakfast accommodation is available at the course venue, Weetwood Hall Conference Centre and Hotel.

We have negotiated the following special rates per night:
- Friday – Sunday evening, bed and breakfast: £82
- Monday – Thursday evening, bed and breakfast: £86

To take advantage of the special rates we have negotiated with the hotel for our course delegates, please book by contacting the hotel direct on 0113 230 6000 (Stevie Standerline), E: stevie.standerline@weetwood.co.uk. Please quote “University of Leeds CPD Unit” and the course name when contacting Weetwood Hall to book accommodation.

Delegates are responsible for their own evening meals.
A list of alternative hotels is available on request.

Please note that accommodation bookings must be made two weeks before the course commences at the latest to qualify for the special rates and to guarantee room availability. Any accommodation requests after this date will be subject to availability and rates.

How to book
Delegates can book their place via our secure online store or by completing a manual registration form. Please follow the guidance below on how to complete your booking:

**Online booking (via debit/credit card)**
1. Log on to our Online Store at: https://store.leeds.ac.uk/
2. Select Conferences and Events in the left-hand navigation bar.
3. Select CPD Faculty of Engineering
4. Select the course or event for which you wish to register and click on “Book”.
5. If you are a new user, please follow the instructions to register.
   If you already have an account log in as instructed.
6. Complete the application process as directed by the booking system.

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

Payment can be made by bank transfer, debit/credit card, or by cheque made payable to the “University of Leeds”. Please note that if you have requested an invoice, registrations received without a supporting purchase order document cannot be processed. Terms of payment are 30 days from date of invoice. Fees must be paid no later than 15 working days before the course commences.

Accessibility
Potential delegates who have any special requirements should contact the course coordinator as soon as possible.

For online booking queries and for all other enquiries please contact:

Jo Robinson
CPD, Conference & Events Coordinator
CPD, Conference & Events Unit
Faculty of Engineering
School of Chemical and Process Engineering Room 3.11, University of Leeds, Leeds LS2 9JT
T: +44 (0)113 343 5746
E: cpd@engineering.leeds.ac.uk
W: www.engineering.leeds.ac.uk/short-courses/@LeedsUniCPD

**Terms and conditions for booking**
Payment in full should accompany your booking. The course fee is exempt from VAT. Fees must be paid in full no later than 15 working days before the course commences. Failure to pay may result in attendance being refused. Registrations are accepted on the understanding that the printed programme is given in good faith but 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 the 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. Delegates will receive a full refund for cancellations made within 7 days of online booking, except where the booking has been made for an event commencing within the next 7 days. Where a delegate wishes to cancel a registration after this 7 day period, written cancellations received up to 15 working days before the course will be subject to an administrative charge of 20% of the total remittance. After this date the full fee is chargeable and no refunds will be made, this also applies for non-attendance but copies of the course documents will be sent. Substitutions may be made at any time. If you are unable to complete your registration using the online booking system please contact the CPD, Conference & Events Unit to discuss alternative arrangements.