# CPD Short Courses 2015 / 2016

The Energy Institute has approved the University of Leeds’ Faculty of Engineering, as an approved training provider

## FIRE ENGINEERING

### Fire and Explosion Investigation

**Monday 28 September – Friday 2 October 2015**

This course has been re-vamped from the previous course entitled Fire & Explosion, Protection and Investigation, and our aim is to focus more on investigation following feedback from our delegates. The course aims to provide a structured approach to Fire Investigation based firmly on sound science and engineering principles within the framework of the new relevant legislation. The course will be delivered by a large team of practitioners and academics, all experts in their particular fields of contribution. Over a 100 case studies will be used by the speakers to demonstrate clearly the application and significance of science principles in fire investigation.


### Fire Dynamics and Modelling

**Monday 26 – Friday 30 October 2015**

On completion of the course, participants should be able to apply general combustion principles to fires, should know the parameters that influence flame spread and steady burning and should be able to quantify the burning rate in compartment fires, predict the rate of development of the fire, the onset of flashover, and appreciate the application of these concepts to fire protection design.


### Fire Safety Design

**Monday 30 November – Friday 4 December 2015**

During the course the key pieces of legislation along with methods for identification and quantification of hazard and risk as well the strategic approaches to fire safety design will be reviewed. The engineering design of specific fire safety systems such as: means of escape, detection and warning, emergency lighting, smoke control and fire extinguishing will be presented and the main sources of more detailed information and guidance will be identified and reviewed.

http://www.engineering.leeds.ac.uk/short-courses/fire-engineering/fire-safety-design/index.shtml

### Gas, Vapour and Dust Explosion Hazards, Protection, Mitigation and Prediction

**Monday 14 – Friday 18 March 2016**

This course is suitable for engineers and scientists involved in both the offshore sector and the onshore chemical process and nuclear industries. More specifically, the course will be of benefit to explosion safety consultants and engineers; research and development scientists/engineers; loss prevention and facilities managers; risk and insurance assessors; civil engineers / designers of process plant; designers and manufacturers of explosion protection systems; those newly appointed to any of the above areas.


## MSc IN FIRE AND EXPLOSION

**Aim:** to provide education and training in the fundamental aspects of fire and explosion development in buildings and process plant and equip the participants with the knowledge and the demonstrable ability to contribute to the design of appropriate protection systems against both hazards. **Features:** Taught modules delivered in intensive one week format

- Full-time or part-time study
- Project work can be work-based
- Full-time programme: September – August
AUTOMOTIVE ENGINEERING

Diesel Particulates and NOx Emissions
Monday 16 – Friday 20 May 2016
A specialist course designed for diesel automotive and petroleum engineers and research workers engaged in the development of low particulate and NOx emission diesel engines and their fuels and lubricants. These are major current problem areas in diesel engine development with ever more stringent emissions legislation to meet in the automotive, industrial, marine and power generation markets. This course concentrates on the engine technology for low emissions, their fuel requirements and after treatment techniques.

Engine Emissions Measurement
Monday 20 – Friday 24 June 2016
A short course to explain the function of heated on-line gas analysis systems for CO2, CO, O2, UHC, NOx, and SOx measurements from gas turbine, diesel and spark ignition engines using liquid and gaseous fuels. Computer processing of gas analysis measurements to derive air/fuel ratios, combustion efficiency, temperature and various pollution parameters will be discussed. Methods of measuring transient emissions and non-regulated emissions are reviewed together with the problem of diesel particulate measurement and analysis, including fuel / lube / sulphate and carbon fraction plus full speciation of the SOF fuel fraction including PAH.
http://www.engineering.leeds.ac.uk/short-courses/automotive/engine-emissions-measurement/index.shtml

ENVIRONMENTAL ENGINEERING
AND WASTE MANAGEMENT

Thermal Treatment of Municipal Waste
Monday 21 – Tuesday 22 September 2015
This course is specifically designed to provide an introduction for all those considering the thermal treatment option for the disposal of municipal solid waste and give a detailed coverage of the various thermal treatment processes and associated issues.

Energy from Biomass Combustion
Monday 11 – Wednesday 13 January 2016
Following extensive market demand and subsequent research, this five day CPD short course has been developed by the Energy and Resources Research Institute at the University of Leeds in conjunction with SUPERGEN Bioenergy. The course will provide a comprehensive overview of energy from biomass combustion.
http://www.engineering.leeds.ac.uk/short-courses/environmental/energy-from-biomass-combustion/index.shtml

Industrial Air Pollution Monitoring
Monday 7 – Wednesday 9 March 2016
This course aims to provide an overview of the whole subject. Day one focuses on general management issues, including legislation, compliance with authorisation conditions, quality assurance and control. It will also provide perspectives from all sides - regulators, industrial emitters and contract source testing organisations. Days two and three focus on measurement and analytical techniques. Gaseous and particulate emissions will be covered and both extractive sampling and in situ methods will be discussed.
http://www.engineering.leeds.ac.uk/short-courses/environmental/industrial-air-pollution-monitoring/index.shtml

CIVIL ENGINEERING

Civil Engineering Law and Contract Management
26 Monday evenings, beginning 28 September 2015
This course is designed for those civil engineers who, in their employment, are becoming increasingly involved in contractual issues with authorities, consulting engineers and contractors. The course programme will focus on the NEC3 Conditions of contract and will be based on the syllabus for the Institution of Civil Engineers Examination which takes place in June.
http://www.engineering.leeds.ac.uk/short-courses/civil-engineering/index.shtml
### PARTICLE SCIENCE AND ENGINEERING

**Powder Characterisation**
Tuesday 10 – Friday 13 May 2016

This short course will outline the principles and methods for characterising the chemical, physical and mechanical properties of powders at length scales ranging from molecular level to single particles and to bulk levels. Sample preparation and the state-of-the-art techniques for particle characterisation will be detailed.

http://www.engineering.leeds.ac.uk/short-courses/particle-science/PowderCharacterisation.shtml

**Crystallisation Science & Engineering**
Monday 18 – Wednesday 20 January 2016

This newly developed 3 day short course will outline the basic science and engineering of crystallisation. The course will be delivered by academic and industrial experts in their field of contribution and will include case studies and laboratory experimental sessions. Delegates will leave with a deeper understanding of crystallisation.

http://www.engineering.leeds.ac.uk/short-courses/particles/Crystallisation.shtml

### MEDICAL AND BIOLOGICAL ENGINEERING

**Leeds Orthopaedic Biomechanics course**
Tuesday 8 – Wednesday 9 December 2015

The course aims to give delegates an understanding of the necessary fundamentals of biomechanics and how they are applied to solve problems in orthopaedics. The course will integrate the engineering and medical approaches to orthopaedic problems.

http://www.engineering.leeds.ac.uk/short-courses/medical-biological/Leeds%20Orthopaedic%20Biomechanics%20course/LOBC.shtml
PARTICLES

Industrial Powder Mixing  
Tuesday 22 – Wednesday 23 September 2015
Emphasis throughout is on the industrial application of basic principles. Extensive interactive notes will be provided to participants and demonstrations, case studies and theory will be introduced wherever relevant. Powder flow and its significance in selecting the most appropriate mixers will be discussed. Quality assurance, powder sampling techniques, a practical discussion of the statistics of mixing and the value of statistics at the formulation stage will be covered. The handling, packaging and marketing of powder products will also be discussed. As well as offering the opportunity to discuss specific problems during the course, the afternoon of Day 2 is offered as an optional powder mixing clinic, or a visit the characterisation facilities of the ParticlesCIC at the University of Leeds.

http://www.engineering.leeds.ac.uk/short-courses/ParticlesCIC/IndustrialPowderMixingCPDCourse.shtml

Rheology of suspensions/dispersions  
2016 course dates to be confirmed
This course covers the rheology of fluids in which particles are suspended. Colloidal and non-colloidal particles are considered as well as nanoparticles. The rheology of suspensions is important during their production, processing and application. The emphasis is on understanding the flow behaviour of complex systems. Where possible quantitative or semi quantitative relations and scaling laws are presented with which the rheological parameters can be predicted or estimated. This should provide the basis for a rational approach to formulating and measuring dispersions.

The course is designed to develop systematically an understanding of the flow behaviour of possibly complex industrial dispersions and slurries. It starts with simple, essentially Newtonian systems, and finishes with non- Newtonian medium, such as polymer melts. For each class of suspension the rheology is explained in terms of the underlying physical mechanisms. Methods for predicting the behaviour, basic laws and scaling relations are presented. Possible measurement strategies and measurement errors are discussed, with special emphasis on specific properties such as yield stress and thixotropy.

http://www.engineering.leeds.ac.uk/short-courses/ParticlesCIC/RheologyofSuspensionsDispersions.shtml

SPRAY DRYING AND ATOMISATION OF FORMULATIONS  
Tuesday 12 – Thursday 14 April 2016
A practical workshop involving demonstrations, theory and real industrial case studies.
Day 1: Spray Drying and Atomisation Basics: Industry and academic experts provide the essential scientific background as well as practical hands-on laboratory demonstrations.
Day 2: Industrial Formulation Case Studies: Experienced specialists will show how the science of spray drying has been applied to influence the properties of real formulated products.


Microencapsulation  
Wednesday 9 – Friday 11 September 2015
This course covers the basic science and engineering of microencapsulation across a wide range of applications including the important stages of emulsification control, stability and release property control. Whilst the majority of the course involves emulsions, multiple emulsions and particle coating is also included as well as a details of the range of valuable characterisation tools and their applicability. The emphasis is on understanding the flow behaviour of the interaction of the various components in such complex systems. This should provide the basis for a rational approach to formulating and producing micro encapsulates to meet a range of needs.

http://www.engineering.leeds.ac.uk/short-courses/particles-science/micro-encapsulation.shtml

If you would like further information on any of the above courses, please consult the relevant course web page. Full programmes are available approximately three months before the date of the course.

FOR ENQUIRIES PLEASE CONTACT:
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