

Fire Investigation Education & Training



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Aims

- Who needs it
- Who else needs it
- Who provides it
- Levels of Fire Investigation training
- Who actually engages with it
- Issues of standards & competency
- Opportunities & threats
- The future



Who needs fire investigation training?

- Fire Service fire investigation officers
- Crime Scene Investigators
- Insurance Fire Investigators
- Forensic scientists specialising in fire investigation / fire scene examination
- Forensic fire engineers & electrical engineers
- HSE specialist inspectors
- AAIB, MAIB, RAIB investigators



Anyone else?

- DVI (disaster victim identification) specialists
- Product safety specialists from certain manufacturing industries

And perhaps.....

- University & HE College lecturers who teach fire investigation (!)
- ALL fire service Crew and Watch Managers
- ALL fire fighters
- Lawyers
- Police detectives



Importance

- Often we don't know if fire is deliberate or accidental until AFTER scene examination or further investigation
- Most junior and inexperienced investigators often make the critical judgement
 - Risk of misinterpretation of the true nature of the case
 - Risk of failing to examine the scene thoroughly
 - Risk of loss of evidence
 - Risk of contamination
 - Risk of assuming accidental fire
 - 15-20% of fire deaths are NOT accidental



Myths, Legends and Errors

- **Cognitive Bias**
- Misconceptions that have crept into fire investigation teaching that indicate arson, e.g.:
 - Charring of wood
 - Crazing of glass
 - Burn patterns on floors
 - Spalling of concrete
 - “too-fast” fire development
 - Angle of “V-patterns”
 - **Post-flashover burn patterns**
 - Unchecked dog indications of accelerant
 - Too-calm behaviour of survivor when family die



Areas of weakness in fire investigation

- Electricity and fire
- Post-flashover burn patterns
- Bias
- Lack of “Scientific Method” in fire scene analysis
- Validation of some methods used to reach conclusions



Who provides Fire Investigation Education?



- In house training:
 - Fire & Rescue Services
 - Forensic Science Providers (CJS)
 - Insurance Fire Investigation Companies
- Gardiner Associates
- Fire Service College (Moreton-in-Marsh)
- A few universities
- Chartered Society of Forensic Sciences
- International Association of Arson Investigators (and UK-AFI)

Levels of Fire Investigation Education



- Levels 1, 2, and 3 basic awareness
 - Generally in-house training:
 - F&RS
 - Some forensic providers:
 - Fire Investigations (UK)
 - Prometheus Forensic Services
- These are not academically accredited
- Also some BTEC module components at FE colleges

Training video 2009

- Training advice for fire fighters
- Produced by Greater Manchester Fire & Rescue Service Fire Investigation Team in conjunction with Greater Manchester Police and the Forensic Science Service



GREATER MANCHESTER
POLICE



Production in association
with



Level 5 Certificate in Fire Investigation

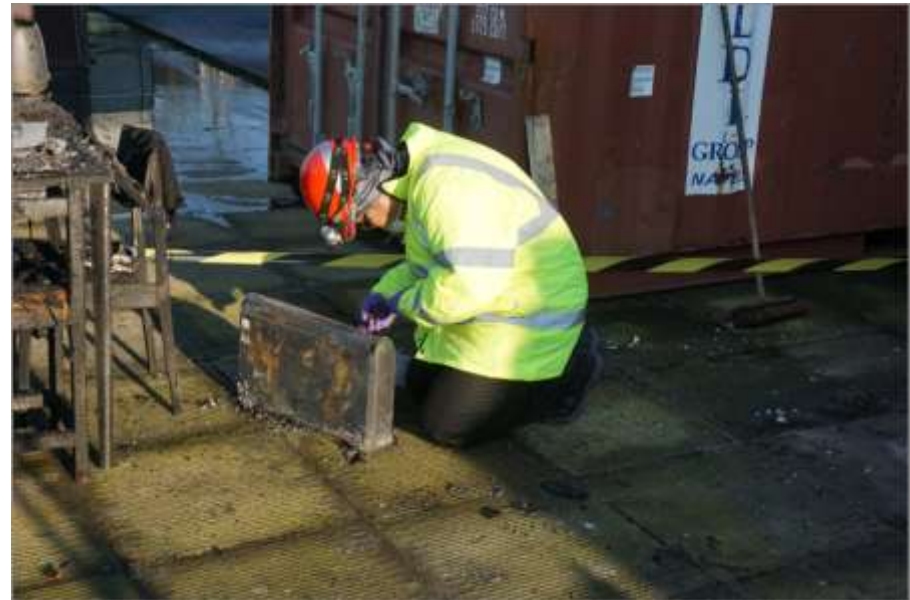
- Level 5 Certificate in Fire Investigation (accredited by Skills For Justice)
 - Gardiner Associates (also IFE accredited)
 - University of Central Lancashire
 - A few F&RS
- Foundation degree
 - Teesside University / Durham & Darlington F&RS



Level 5 course

To NOS

- Level 4, plus
- S4J NOS F1 Preparation for the investigation
- S4J NOS F2 Carrying out the investigation
- S4J NOS F3 Reporting on the investigation
- S4J NOS DA5 Presenting evidence at court



Level 6 modules on undergraduate degrees

- University of Central Lancashire
- Part modules at other universities and HE colleges providing forensic science degrees



Master of Science Degree Courses & Level 7 Modules



- MSc:
 - University of Central Lancashire
 - University of Wolverhampton
- Level 7 Modules / short courses*:
 - Universities of Cranfield, Leeds*, Edinburgh*, Strathclyde, Dundee
- Top-up award to MSc for CSoFS PG Diploma in Fire Investigation or IFE modules
 - Universities of Stafford, and Anglia Ruskin



MSc

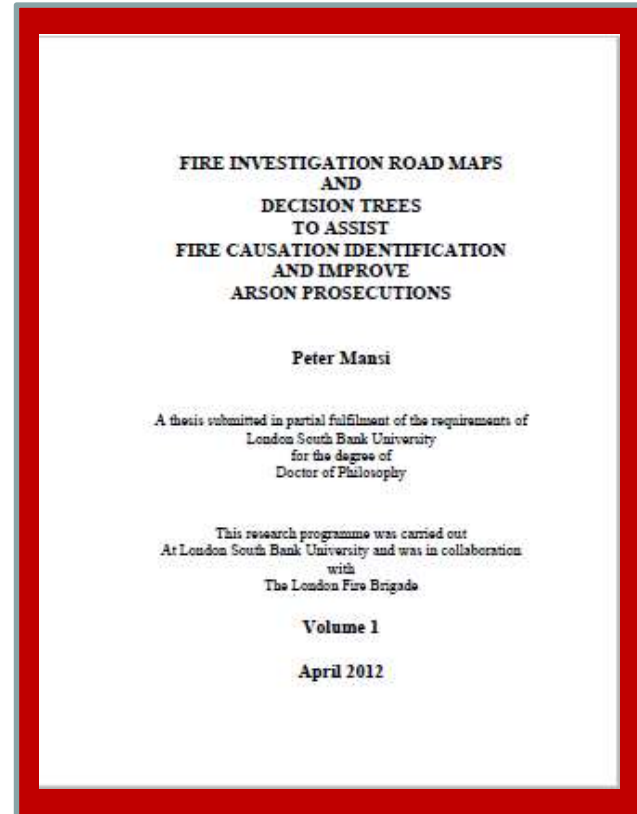
- Currently UCLan is the only university providing a Fire Investigation MSc including:
 - Fire debris analysis
 - Electrical debris examination (SEM, X-Ray etc.)
 - Laboratory fire tests
 - Fire toxicity
 - Chemistry of combustion of materials





PhD (level 8)

- Only very few fire investigation PhDs
 - e.g. John DeHaan, Nick Carey, Peter Mansi



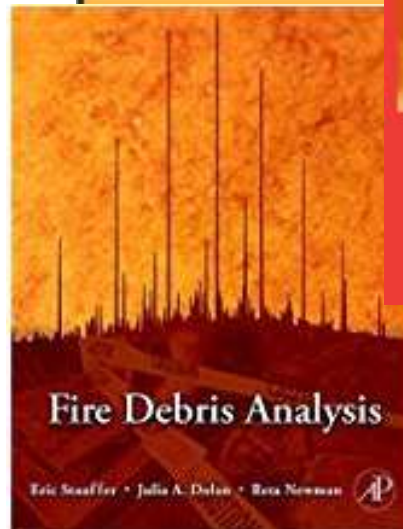
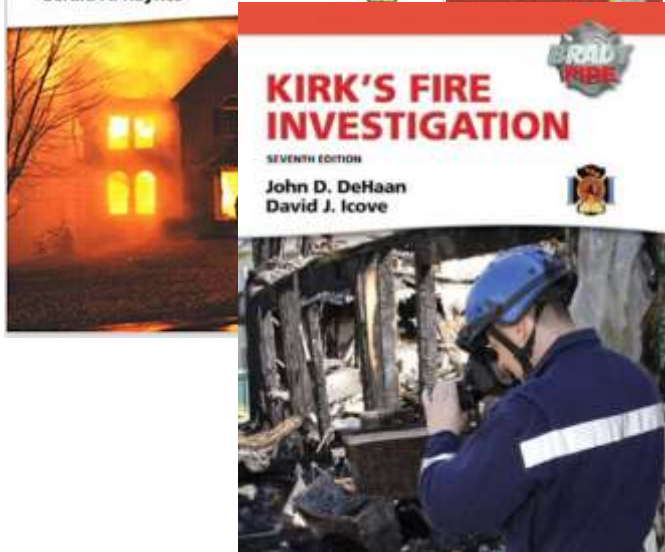
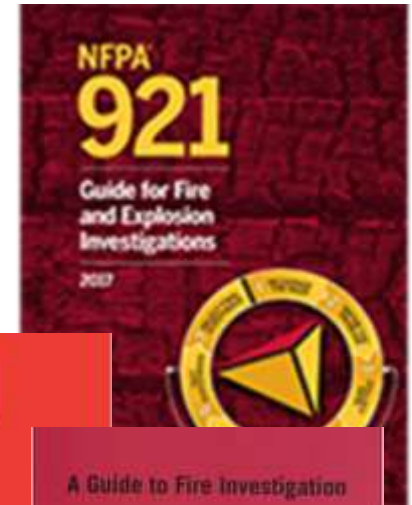
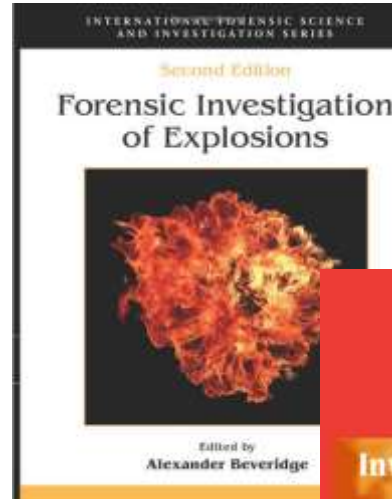
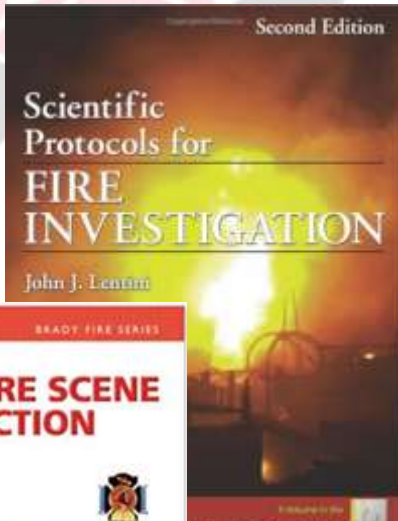
Online Training packages



- International Association of Arson Investigators (USA)
 - CFITrainer.net: Free modular training package
 - Online certification to “Fire Investigation Technician” level
 - Requirement for the Certified Fire Investigator qualification
 - CFI program is far more arduous
 - CFI has a written exam & oral paper
 - CFI requires evidence of current & continuing fire investigation practice
 - CFI must be renewed every 5 years

Currently there are 25 CFIs in the UK, who have been certified by the UK –AFI (UK chapter of the IAAI)

Resources



Who takes the courses?

- Levels 1-3:

- F&RS Watch managers, Station managers
- HE college students
- Fire fighters in some F&RS (e.g. Lancashire)

- Level 5

- F&RS Fire Investigators (WM and SM)
- Some CSIs & MOD personnel
- A few Forensic Scientists (historically)
- Some insurance fire investigators

Level 7 short courses

- Forensic Scientists
- Insurance fire investigators
- Fire engineers
- HSE, AAIB, MOD and other specialists
- Fire Investigation officers
- A few CSIs

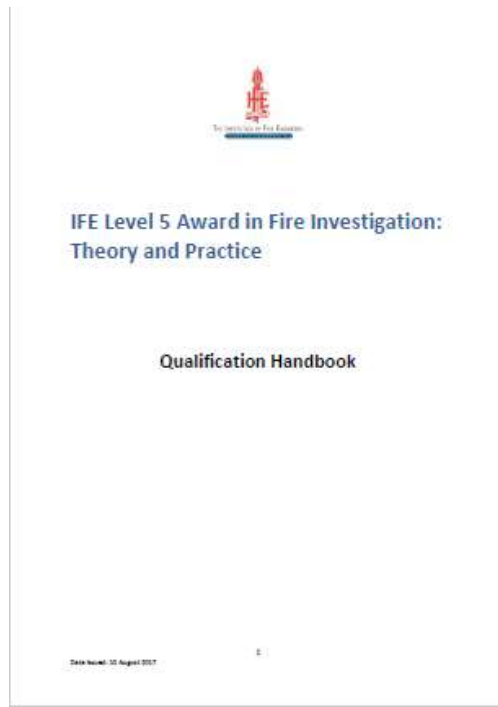
- MSc courses

- Fire Investigation Officers (F&RS)
- Police/fire/forensic officers from abroad
- Graduates in forensic science & fire engineering



Standards & Competency

- National Occupational Standards for Fire Investigation



Codes of Practice

Code of Practice for Investigators of
Fires and Explosions for the Criminal
Justice Systems in the UK

Coming into effect April 2017

Jointly endorsed by



Work-related deaths:
A protocol for liaison
(England and Wales)



Codes of Practice and Conduct



Codes of Practice and Conduct
*for forensic science providers and practitioners
in the Criminal Justice System*

Issue 3

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FSR-Codes

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ISO 17020

BS EN ISO/IEC 17020:2012



BSI Standards Publication

**Conformity assessment -
Requirements for the
operation of various types
of bodies performing
inspection**

bsi.

...making excellence a habit™





Threats

- Anticipated failure of most F&RS to meet ISO17020 by 1st October 2020
- Police reluctance to pay for expertise
- **AUSTERITY: Shrinkage of F&RS**
 - Lack of F&RS personnel on HE courses
 - Disbanding of fire investigation teams
 - Loss of fire investigation dogs
 - Retirement of experienced FI officers
 - Succession planning issues in F&RS
 - Lack of forensic scientists in fire investigation for CJS
- Continuing shrinkage of fire engineering & fire science provision in the UK university sector



Opportunities

RESEARCH

- Mostly case work related so often not publishable
- BSc and MSc dissertations
- F&RS research (e.g. LFB)



Summary

- Fire Investigation is a very “niche” market
- It is approaching a possible “perfect storm”
- Most training is “in-house”
- Very few providers of accredited education
- Most uptake is on short courses
- Research is sparse
- Sector is under threat but the need for education is very high



Any Questions?



School of Forensic & Applied Sciences