

Module Title Fire, Explosions And Firearms	Reference AS3065 SCQF SCQF Level 9 SCQF Points 30 ECTS Points 15 Created June 2002
Keywords Fire Dynamics, Materials, Fire Investigation, Explosions, Firearms, Ballistics, Firearm Discharge Residues.	Approved June 2002 Amended June 2015 Version No. 4

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

Analytical Science I (AS2040)
and Analytical Science II or
equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To provide the student with the
thermodynamic, kinetic and
materials chemistry principles,
concepts and practice which
underly the forensic
investigation of fires, explosions
and firearms.

Explosives and explosions: types
and chemistry of explosives,
initiation and detonation.

Investigation and analysis. Safety
and disposal.

Firearms: mechanisms and design
aspects, introduction to ballistics,
scene of shooting incident, firearm
discharge residues, forensic
laboratory examination, proof
marks.

Evidence: collection, avoidance of
contamination, storage, assessment
of significance.

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Lectures	57
Practical	6
Tutorials/Seminars	18
Visiting Speakers	3

Directed Study

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1.Explain and apply the principles of thermodynamics and kinetics as applied to combustion and heat transfer.
- 2.Assess and discuss the properties and fire behaviour of the principal materials used internally in domestic & commercial buildings.
- 3.Explain the concepts and principles underlying the forensic investigation of explosions, firearms and suspected arson.
- 4.Analyse typical productions and communicate effectively (orally and in writing) the interpretation of the laboratory results from explosion, firearms or fire incidents.

Indicative Module Content

Fire dynamics: Gas laws(ideal and non ideal) , thermodynamics(internal energy & work , enthalpy of combustion, heat capacity, flame temperature, flame height), kinetics(effect of temperature on reaction rate) , heat transfer mechanisms. Common Materials; metals ,non-metals, natural & synthetic polymers. physical & chemical

Directed Study

66

Private Study

Private Study

150

Mode of Delivery

Basic knowledge will be imparted through lectures, tutorials and practical workshops. Students will be expected to contribute through the retrieval and study of case studies. It is proposed to include lectures from forensic practitioners and fire experts.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3
Component 2	4

Component 1 is a closed book examination.

Component 2 is a Report and an oral presentation.

Indicative Bibliography

- 1.STAUFFER, E. et al. *Fire Debris Analysis*. Current Edition. Elsevier.
- 2.BEVERIDGE, A., ed., *Forensic Investigation of Explosions*. Current Edition. Taylor and Francis.

properties , heat and fire damage

Fire growth & decay, Fire investigation: types of fires, location of seat of fire, laboratory examination of debris.

3. WARLOW, T.A. *Firearms, the Law and Forensic Ballistics*. Current Edition. Taylor and Francis.
4. DeHAAN, J.D. *Kirk's Fire Investigation*. Current Edition. Pearson/Prentice Hall.
5. NIC DAEID, N. *Fire Investigation*. Current Edition. CRC Press
6. HAAG, M.G. *Shooting Incident Reconstruction*. Current Edition. Amsterdam, Academic Press (Elsevier). E-edition available at RGU Library.