3 DAY COMPARISON MICROSCOPY (BALLISTICS)

Helston Forensics
FORENSIC BALLISTIC LABORATORIES

Introduction

The Course is designed to deliver knowledge and understanding of comparison microscopy examination of tool marks in relation to firearms and ammunition.

Aims/Outcomes

- To give the student the opportunity to develop the skills and knowledge to conduct independent comparison and evaluation of forensic samples
- To gather evidential information relevant to forensic samples
- Verify findings

Notes

1. The student will have the opportunity to produce their own samples.
2. Samples can be retained by the student.
3. The course duration will be 0900-1730, finishing at 14:30 on the third day.
4. Refreshments and lunch to be provided.
5. All safety equipment will be provided.
6. No section 5 category weapons will be handled by students during the course.
7. Assistance with hotel bookings will be available from our office staff.
8. This is a CPD-related course. This can contribute to your Continuing Professional Development (CPD) and will be evidenced through multiple-choice summative assessment and the award of a course completion certificate.
9. The principal instructor will be the factory appointed UK chief instructor for the LCF 1000 & LCF 1600 comparison microscopes, distributed by Locards Principle Limited throughout the UK/Europe/Africa.

ITINERARY DAY ONE

- Health & Safety – weapons/ammunition safe handling
- Introduction to the use of the comparison microscope
- History and development of comparison microscopy
- Theory of comparison microscopy
- Forensic science: forensic principles – law and responsibility
- The microscope itself – what are the main components

Microscope overview

- Key features and benefits
- The importance of a bridged system
- Sample holders

Light source

- Types of light source
- Light manipulation
- Practical exercises

Use of the system for casework

- Forensic strategy
- Sample handling
- Best practice
- Certification
- How to use the system for collaborative work

Microscope set up and basic start of the day checks

- Setting up to start work
- Ergonomics
- Optical correction

Developing familiarity of the system

Image capture

- The options
- Keys to success
- Software and data recording

Round up Summary of the day and feedback

ITINERARY DAY TWO

- Ammunition components and methods of manufacture
- Introduction to reloading and reloading equipment
- Introduction to internal firearm mechanisms
- Origins of marks made during the cycle of operations

Cartridge case

- Breech face impression
- Extractor mark
- Ejector mark
- Firing pin impression
- Other marks

Projectile

- Chamber marks
- Barrel striations
- Other marks

Class characteristics/mark types

- Striated
- Impressed

Sample preparation

- Water tank
- Fibre recovery
- Permagel

- Safe Firearm Handling
- Safe test firing techniques (man firing /remote firing)
- Practical test firing and recovery
- Practical mark examination – cartridge cases
- Practical mark comparison – projectiles
- AFTE – definition and recommendations
- Introduction to 'Quantitative Consecutively Matching Stria' (QCMS)
- Interpretation and conclusions
- Alternative hypothesis
- Note taking
- Peer review

Round up summary of the day and feedback

ITINERARY DAY THREE

Revision and practice

- Practical exercises
- One case projectile or cartridge mark as examiner
- One case projectile or cartridge case mark as peer reviewer
- Case submission

Results

Certificate presentation

Comparison microscopy lab with comparison microscopes suitable for looking at a range of samples

Microscopy lab with a range of microscopes used for a specialist examinations

Our new purpose built teaching rooms boasts eight comparison microscopes and associated equipment. We hope that these new facilities combined with our excellent teaching staff will allow us to offer an exceptional service and a valuable source of information to the forensic science community in the UK and overseas for many years to come.

Scanning Electron Microscopy – SEM CamScan MX2500

The CamScan instrument is a research-grade analytical SEM capable of reaching 100,000 x magnification. High-resolution images of biological samples, metal surfaces, particles, fibres and material surfaces can be achieved with this instrument. This system also has EDX capabilities (above Z=11), whereby elemental analysis or chemical characterisation of a surface can be performed.

Contact Details

Helston Forensics

Water-Ma-Trout

Helston

Cornwall TR13 0LW

United Kingdom

Tel: +44 (0) 1326 574747

Email: info@helstonforensics.com