Helston Forensics

F o r e n s i c B a l l i s t i c L a b o r a t o r i e s

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INTRODUCTION TO COMPARISON MICROSCOPY BALLISTICS

OVERVIEW:

This course is designed to deliver knowledge and understanding of comparison microscopy examination of tool marks in relation to firearm and ammunition.

AIM / 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**
- **To verify findings**

An itinerary for each day has been provided below.

NOTES:

1. **This is a CPD-related course. This course can contribute to your Continuing Professional Development (CPD) and will be evidenced through a multiple-choice summative assessment and the award of a Course Completion Certificate.**
2. **The student will have the opportunity to produce their own samples.**
3. **Samples can be retained by the student.**
4. **All safety equipment required will be provided.**
5. **The course duration will be 0900 – 1730, finishing on day three at 1430.**
6. **The student will not require knowledge of firearms to attend this course.**
7. **No section 5 category weapons will be handled by students during this course.**
8. **Assistance with hotel bookings will be available from our office staff.**
9. **The principal lecturer will be the manufacturer 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 – Identification of 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 DAY CHECKS

- Setting up to start to 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 mechanism

Origins of marks on 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 – definitions & recommendations

Introduction to ‘Quantitative Consecutively Matching Stria’ (QCMS)

Interpretation & Conclusions

Alternative hypothesis

Note taking

Peer review

ROUND UP, SUMMARY OF THE DAY AND FEEDBACK

ITINERARY: DAY THREE

REVISION AND PRACTICE

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

RESULTS

CERTIFICATE PRESENTATION

END