

Dahlstrom Forensics Shooting Scene Reconstruction Course – Level I

Length of Course: 5 days

Maximum No. of Participants: 20

Overview:

This 5 day course covers the identification, interpretation and documentation of general bullet paths and other projectiles through the examination of projectile impact sites in a forensic context.

At course completion students will gain knowledge in the following areas:

- Safe handling practices and initial documentation for firearms at a scene
- Identification and proper description of fired ammunition components
- Basic understanding of internal and external ballistics
- Recognize and interpret bullet damage on various types of materials (common building material and vehicles)
- Preparation and use of various chemical tests related to bullet impacts
- Documentation of bullet impacts
- Rudimentary bullet path analysis (general directionality, origin of shot)
- Photographic documentation of general directionality of a bullet path
- Interpretation of bullet damage/bullet path analysis and reporting wording

Equipment

- Trajectory kit (rods, cones, lasers, strings, angle finder)
- Camera

Major teaching point:

1. Firearm/ammunition basics
2. Characterization of bullet impact damage
3. Wound ballistics
4. Use of chemical spot tests
5. Documentation and reporting of bullet impact damage
6. Mock court presentations

Course Breakdown:

Day 1:

Foundation/Theory (Classroom)

- o Introduction and orientation
- o Firearm/ammunition basics
 - Safe handling of firearms (i.e. is the firearm loaded, various actions and types of safeties)
 - Firearms nomenclature and components

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- Ammunition nomenclature and component
 - Identify and properly describe various types of ammunition (e.g. calibres, headstamps, bullet types)
- Recognition of fired ammunition components
- o Collecting firearms evidence at a shooting scene
 - Preservation and packaging
 - Evidence submission

Practical (Classroom and Range)

- o Safe handling and documentation of various firearms and ammunition types

Wound ballistics

- o Introduction to wound ballistics
- o Permanent (crush) cavity, temporary (stretch) cavity, and fragmentation
- o Wound profiles of various firearm/ammunition combinations

Practical

- o Shooting ballistic gelatin, and clothing with various firearms and ammunitions

Day 2:

Foundation/Theory (Classroom)

- o Introduction to internal and external ballistics
 - Interaction of the bullet and the bore
- o Introduction to terminal ballistics
 - Ricochet and intermediate targets
 - Where to look for ammunition components (e.g. shotgun wads)
 - Bullet impacts basics
 - Is it a bullet hole?
 - Entrance or exit?
 - Primary or secondary?
 - Documenting bullet damage
 - How bullets react at impact in building products (e.g. wood, vinyl, glass, brick/concrete)
 - Determining direction of travel
- o Introduction to the theory of chemical tests
 - Sodium rhodizonate test for lead
 - Dithiooxamide (DTO) test for copper
 - Abilities and limitations of both tests
 - Commercial alternatives to sodium rhodizonate and dithiooxamide tests

Practical (Range)

- o Shooting various building materials utilizing an array of firearms and ammunitions
- o Recording observations

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- o Preparation and use of color positive chemical tests for lead and copper
- o Practical exercises in use of chemical tests

Day 3:

Foundation/Theory (Classroom)

- o Introduction to Shooting Incident Reconstruction
 - Bullet trajectory based on characteristics on primary target
 - Bullet impacts in glass: plate glass, tempered glass and laminated glass
 - Sequencing shots, can it be done?
 - Bullet impacts in automobiles
 - Ricochets, graze marks and non-penetrating strikes
 - Locating, identifying, measuring and recording impacts
 - Recovering bullets
 - Bullet path analysis
 - Determining area of origin
 - *Understanding limitations

Practical (Range)

- o Shoot automobiles, windows, and windshields using various firearms and ammunition combinations
- o Observe, measure, and record pertinent information and exhibit material

Day 4:

Foundation/Theory (Classroom)

- o Photographing bullet paths and damage
 - o Photographic evidence limitations
- o Photography vs Quantitative analysis
- o Presentation of findings
- o Producing a report

Final Test

Day 5:

Foundation/Theory (Classroom)

- o Review Theory

Practical (Range)

- o Processing a series of stations with bullet damage on a number of different materials commonly encountered at a shooting scene / processing a vehicle with a number of areas of suspect bullet damage

Present results in a group format (Classroom)