Curriculum Outline

Course Title: Documentation and Bloodstain Pattern Analysis

Course Description:
This three day course will benefit crime scene investigators, detectives and anyone involved with law enforcement that investigates crime scenes involving bloodstain patterns. This course will help the criminal investigator in identifying, documenting and collecting all the evidence at a scene, where blood evidence is present, to assist them in reconstructing the incident. The students will learn how to use the tools necessary to determine the blood's trajectory and possible location of the suspect and/or victim at the time of the incident. Students will also learn to examine the bloodstain evidence to determine the types of events that occurred during the incident. The students will incorporate the lessons learned during the classroom in hands-on scenarios that will enhance the learning process.

Number of instructional hours: 21.5
Number of lecture hours: 7.5 **Number of hands-on training hours**: 14

Submitted by: Sgt. Miguel Santiago (Ret.) and Det. Terry Brandon (Ret.)

Course Objectives Classroom Training:

- **Bloodstain Pattern Analysis –** Students will learn how BPA reveals the details and actions surrounding a bloody incident.
- **Predictability –** Students will learn that due to blood's predictable reaction to external forces that it can be replicated.
- **Function of BSA –** The students will learn that the physical characteristics of bloodstain patterns observed aid in revealing valuable insight into the violent events that created the bloodshed.
- **Information Learned From BSA –** Students will learn that BPA can reveal the direction from which blood originated, the angle of impact, the location of the victim and suspect, the approximate number of blows and movement patterns of a bleeding subject.
- **3 Styles of Bloodstains –** Students will learn about passive, projected and transfer bloodstains.

- **3 Velocities of Blood Spatter** – Students will learn about low, medium and high velocity blood spatter and how each is created.
- **Importance of Bloodstain Evidence** – Students will learn how BPA can assist in reconstructing a crime scene, place a subject in a particular location, can corroborate or refute witness statements, and may be sued to exonerate or acquit a suspect.
- **Directionality** – Students will become familiar with how blood stains can show directionality based on the angle of impact.
- **Bloodstain Photography** – Students will familiarize themselves with the basic photography protocol to obtain examination quality photographs that may be introduced as evidence during trial.
- **6 Basic Event Types** – Students will learn the six basic event types that may be found in a crime scene where blood evidence may be found. Students will learn to interpret bloodstain patterns to identify the event types.
- **Presumptive Testing** – Students will learn to use the proper field testing products to conduct a presumptive test of a stain and determine if it is blood.
- **Chemical Enhancement** – Students will learn to use chemicals to enhance bloodstain patterns that may not be visible to the naked eye.

Course Objectives Hands-On Training:

- **Angle of Impact Exercise** – students will drip blood droplets onto surfaces at different angles to demonstrate how directionality can be replicated.
- **Passive Bloodstain Exercise** – Students will create bloodstains on different surfaces from different heights and angles to determine the effect gravity has on blood in a passive situation.
- **Cast-off Pattern Exercise** – Students will use a blood soaked object to create cast off patters to replicate images from a crime scene.
- **Arterial Gush/Spurt Exercise** – Students will use training equipment to replicate arterial spurts or gushes.
- **Passive with Movement Stain Exercise –** Students will use a pipette and drop blood while walking, fast walking, and running, Students will dip an object or gloved hand in blood, allow hand or object to hang down beside them and walk around.
- **Pooling and or Flowing of Wet Blood Exercise** - Student will be able to determine large volumes of wet blood and how the flow of blood due to gravity or movement, serum separation, drying effect of pools of blood, and elevation change of surface that the blood is on.
- **Transfer Pattern Exercise -** The student will be able to create transfer patterns with an object onto different surfaces using blood.
- **Swipes and Smears Exercise** – The student will be able to create wipe patterns and swipe patterns, distinguish between the two using basic characteristics and determine order of events.
- **Presumptive Blood Field Test; Visible Stains** – Students will use Hemastix along with the proper protocol to determine if a stain is actually blood.

- **Presumptive Field Test for Non-visible or Cleaned up Blood** – Students will use Bluestar to enhance a bloodstain pattern and photograph the enhanced evidence.
- **Required Assessments:** Participation in class and hands-on events is required to improve upon the learned skills. Documentation will be assessed for details and observations of the investigation. After action reviews will be conducted after each hands-on station to reinforce the skills learned. Students will compile all their notes and handouts to demonstrate the application of all skills learned during the course.