DNA Workshop (8 Hours)

(No abstract)

Forensic Entomology (4 Hours)

Instructor: Robert B. Kimsey, PhD, University of California, Davis

Entomology, the study of insects, increasingly finds applications in Forensics, particularly in homicide investigations where the timing, location, and other particulars of a death remain obscure. A relative new-comer to the field of forensics, entomological evidence typically develops after death, requiring specialized evidence collection, handling, preservation, and analysis. This workshop will cover how entomology may be used in civil and criminal court, what the Entomologist does, the three paradigms we bring to bear on forensic investigations, how entomologists answer the questions of timing investigators typically ask, what entomological evidence looks like, and the typical species of forensically-important arthropods inhabiting this region. The important aspects of maggot and fly biology and how these become incorporated into calculations of timing will be described. Most importantly, successful analysis depends on careful collection of insect and temperature data. Thus, Dr. Kimsey will demonstrate when, where, and how to sample entomological evidence, as well as its subsequent treatment and preservation as evidence for the investigator.

Processing Officer-Involved Scenes/Leica 3D Scanning (8 Hours)

Instructors: Terence Wong and Daryl Chan, Contra Costa County Crime Lab
Barry Grove, Contra Costa County District Attorney’s Office
Dietrich Evans, Leica Geosystems

This workshop will consist of a morning session of presentations detailing scene considerations and procedures for processing and documenting officer-involved incidents. A senior prosecutor will discuss Contra Costa County’s officer-involved incident protocol, which has been used very effectively to investigate these types of crime scenes for many years. The afternoon will be comprised of lecture and demonstrations relating to documenting these scenes using Leica 3D scanning equipment, including tips and tricks from the manufacturer as well as an experienced criminalist familiar with its use.

Technical Writing for Criminalists (8 Hours)

Instructor: Ann Neumann, MA, JD

This workshop will review the essential elements of technical writing in forensic science, with a focus on achieving clarity in crime scene investigation and lab reports. We will address common grammar, punctuation, and word use errors and will learn techniques for an effective, readable style. The course format will be a blend of lecture, class discussion, and individual and group work.
Every forensic drug analysis begins with one crucial step that plays a major role in determining the severity of a criminal charge – recording the weight of a suspected illicit substance. To ensure this weight is accurate, labs often rely on the quality management system to define a weighing process which includes proper recording criteria and the determination of measurement uncertainty. A concept that has been overlooked by many Forensic Institutions is the calculation of the minimum sample weight. This concept provides an additional level of accuracy and ensures proper weighing results.

Weighing is a key step in qualitative and quantitative drug analysis and strongly influences the integrity of the final result. The standout prerequisite for traceable and accurate weighing is the effective calibration of weighing instruments, which also comprises the estimation of measurement uncertainty. Historically, many laboratories set their own calibration procedures due to the lack of nationally or globally recognized calibration guidelines. Based on international cooperation from subject matter experts in the field of metrology, efforts were made to globally harmonize the methodology to calibrate weighing instruments. The major benefit of this harmonization is the ability to estimate measurement uncertainty at the time the instrument is calibrated and also provide guidance to estimate uncertainty during day-to-day usage. This resulted in the calculation of the minimum weight, the smallest amount of net substance that needs to be weighed in order to achieve a specified degree of accuracy. Minimum weight is a key parameter for quantitative drug analysis. It ensures the accuracy of the overall analysis is not negatively impacted by an insufficient sample weight.

To help meet requirements set forth by regulatory organizations it is also important to understand the benefits of incorporating components of the weighing process with an integrated data management system. In recent years an increasing number of assessments and internal audits have revealed incomplete data, the lack of audit trails, and falsification of results. While most labs have turned toward LIMS systems with the idea of replacing the manual workflow, these systems are designed primarily to aggregate result data from an array of analytical tests - not automate and document bench top workflows or bind instrument metadata to the measurement.

Regulatory organizations have recognized both the advantages and limits of electronic data systems, and have increasingly established further controls for the use of such systems, all the way down to bench-top instruments. The goal of reducing errors, simplifying processes, and reinforcing compliance can become further challenging when trying to directly integrate and automate bench top instruments. As regulators continue to tighten their auditing approaches, it is critical for forensic scientists to understand the key issues surrounding data integrity.

This workshop will include hands-on exercises and provide an overview on the harmonization of calibration procedures and the resulting concept of incorporating a minimum weight with measurement uncertainty. It will discuss the criteria for data integrity based on recent guidance issued by various regulatory agencies. It will provide practical solutions to improve data management processes and address many data integrity weaknesses typically found in a Forensics laboratory.
Alcohol-Impairment Workshop (4 Hours)

Instructors: Denise Gallagher, Stephanie Souza, and Sarina Sigmon, Contra Costa County Crime Lab

In this workshop, drinking participants will be given known, calculated amounts of alcohol. During the process of absorption and elimination of alcohol, drinking participants will perform standardized field sobriety tests, perform other divided attention tasks/games, and undergo breath alcohol tests. Workshop attendees will observe the effects of alcohol on drinking participants to further understand the relationship between breath alcohol concentration levels and impairment.