

FSC104:FORENSIC DERMATOGLYPHICS AND IMPRESSION ANALYSIS

L:4 T:0 P:0 Credits:4

Course Outcomes: Through this course students should be able to

CO1 :: remember the history, biological basis, and fundamental principles of dermatoglyphics and fingerprint ridge characteristics.

CO2 :: understand the ability to collect, develop, and preserve various types of fingerprint impressions using physical and chemical techniques.

CO3 :: understand the role of technological advancements such as AFIT, biometric identification, and micro x-ray fluorescence in modern fingerprint analysis.

CO4 :: analyze advancements in fingerprint and impression evidence analysis including biometric tools, software, and forensic databases for improving accuracy and automation in identification.

CO5 :: examine different types of impression evidences and distinguish between their class and individual characteristics.

CO6 :: assess procedures for the development, casting, and comparison of impression evidences using various collection and enhancement techniques.

Unit I

Introduction to Forensic Dermatoglyphics : introduction to dermatoglyphics, history of dermatoglyphics both national and international perspective, biological formations of ridges, formation of fingerprints, fundamental principles of fingerprinting, types of fingerprint patterns, fingerprint ridge characteristics, significance of poroscopy and edgeoscopy, composition of fingerprint residue

Unit II

Development of Fingerprints : collection of fingerprints, classification and cataloguing of fingerprint record, types of impression left on the surface, latent fingerprints detection by physical and chemical techniques, mechanism of detection of fingerprints by different developing reagents, application of light sources in fingerprint detection, preservation of developed fingerprints, digital imaging for fingerprint enhancement, fingerprinting the deceased, developing fingerprints on gloves, Aadhar Data-Unique Identification Authority of India

Unit III

Advancement in Dermatoglyphics : Automated Fingerprint Identification Technology (AFIT), Bio-metric Identification, micro x-ray fluorescence, color changing films utilized in developing fingerprints, developments of prints from metal objects, development of prints from washed surfaces, non-invasive techniques of fingerprint development

Unit IV

Introduction to Impression Evidences : introduction to impression evidences, types of impression evidences found at crime scene, classification of impressions on the basis of visual appearance, lip prints; their nature and location, foot and footwear impressions; their nature and location of occurrence, importance of gait pattern, tyre marks, skid marks and drag marks; their nature and location of occurrence, bite marks; nature, types and location of occurrence, ear prints; nature and location of occurrence, original and replaced tyre impressions, tread nomenclature and indicator of wear and tear, class and individual characteristics of various impression evidences, tool marks; their types, nature and location of occurrence

Unit V

Development of Impressions : methods of collection of various impressions, casting of impressions, electrostatic lifting on impressions, utilization of light source for impression evidence visualization, generation of control standards for comparison, comparison of control and questioned impression, proceedings to be followed at crime scene for handling such impressions

Unit VI

Advancement in Impression Analysis : utilization of forensic photography in impression analysis, image enhancement, facial reconstruction, analysis of combination of impression evidences, various equipment involved in analysis, TraX Software, SUT-Lip-DB; Database for lip prints

Text Books: 1. BIOMETRICS & FINGERPRINT ANALYSIS by S.INDIRA SUDHA, Selective & Scientific Books

References: 1. FORENSIC SCIENCE IN CRIME INVESTIGATION by B. S. NABAR, Asia Law House

