



SAM GLOBAL UNIVERSITY

Established under Govt. of M.P. & Recognized by UGC
Address: Gram- Agariya Chopda, Dist. Raisen (M.P.)
Website: www.samglobaluniversity.ac.in

Subject: Forensic Science

Unit – I.

1. **Forensic Science:** Definition, History & Development, Scope, Ethics in Forensic Science
2. **Physical Evidence:** Nature, Types, Search methods, Collection, Preservation, Packing & Forwarding of Physical & Trace evidence for forensic analyses, Chain of Custody
3. **Crime Scene:** Nature, Types, Preservation of Scene of Crime
4. **Criminal Investigations:** Unnatural deaths, Criminal assaults, Sexual offences, Poisoning, Vehicular accidents
5. **Courts:** Types, powers and jurisdiction, Admissibility of evidence in Courts, Definition of Experts, Provisions in Cr.P.C.,1973 & Indian Evidence Act relating to experts & their reports; Court Procedures pertaining to Expert Testimony & Witness
6. **Organization of Forensic Science Laboratories of Centre and State, NCRB and NICFS**
7. **Fundamental Rights:** Right of Equality (Articles 14 to 18) and Right of Freedom (Articles 19 to 22) as per Constitution of India
8. **Criminal Profiling:** Profile of victim and culprit, its role in crime investigation, Lie detection (Polygraphy), Narco analysis, Brain mapping, scope and limitations
9. **Concept of quality control management in Forensic institutions**

Unit – II

1. **Microscopy:** Polarizing, Comparison, Stereoscopic, Fluorescent and Electron Microscopes
2. **Spectrophotometry:** UV, Visible, IR, Raman, Atomic absorption, Emission
3. **Neutron Activation Analysis**
4. **X – rays and x-ray based techniques** such as XRD, XRF
5. **Mass Spectroscopy**
6. **Chromatographic Techniques:** TLC, GLC, HPLC, HPTLC
7. **Hyphenated Techniques:** GC-MS, LC-MS, IR-MS and ICP-MS
8. **Electrophoresis:** High and Low voltage electrophoresis, Immunoelectrophoresis
9. **Immunoassays:** Principle, Types, Techniques and applications

Unit – III

1. **Detection and Identification of Blood stains**
2. **Determination of Species of Origin**
3. **Blood Group Systems**
4. **Techniques of Determination of Blood groups of Blood Stains**
5. **Detection of Seminal and other body fluids and their Blood Grouping,** Red cells
Enzymes, Serum Proteins of forensic significance
6. **Disputed Paternity & Maternity**
7. **DNA:** Structure, DNA as genetic marker, DNA Extraction and Profiling Techniques
8. **DNA Phenotyping and RNA Profiling & their applications**
9. **Wild life Forensics:** Wild life (Protection) Act, 1972, Scope, Evidences and Identification

Unit – IV

1. **Analysis of Ethyl alcohol** in beverages , liquors, biological fluids and breath
2. **Analysis of Methanol and Denaturants**
3. **Illicit liquors**
4. **Analysis of Chemicals in Trap Cases**
5. **Metabolism and Chemical examination of :**
6. Insecticides & Pesticides, Tranquillizers & Sedatives, Hypnotics Stimulants, Narcotics, Opiates, Drugs of abuse; Analyses of above and their Toxicity
7. **Plant poisons**
8. **Metallic Poisons**
9. **Extraction, Isolation & Clean-up procedures, Identification of common poisons from viscera, tissues and body fluids**

Unit – V

1. **Fire arms:** Types, Classification, Ammunition and their Compositions
2. **Forensic examination** of Firearms, Ammunition, Firearms' projectiles (Bullets, Shots, Slug etc.), Shell case
3. **Gunshot residues analysis**
4. **Concept of** Velocity, Penetration, Dispersion, Ricochet, Accidental Discharge, Determination of Range in firearm cases
5. **Examination** of Country made firearms
6. **Basics of Internal, External and Terminal Ballistics**
7. **Tool marks: Meaning, Types and Examination**
8. **Restoration of Erased Markings on Metal Surfaces**

Unit – VI

1. **Fire and Arson:** Analyses of Petroleum Products and other incendiary materials
2. **Explosives:** Definition, Types and Analyses
3. **Bombs:** Country made bombs, Improvised Explosive Devices (IEDs) and their examination
4. **Investigation** in Explosion and Arson related cases
5. **Photography: Types, application in criminal investigation & Forensic evidence examination**

Unit – VII

1. **Hair & Fibers:** Nature, Types, Structure and Examination
2. **Pollens and Diatoms:** Their application in Forensic investigation
3. **Dust & Soil:** Nature, Types, Forensic Examination
4. **Paint, Lacquer & Varnishes:** Nature, composition and forensic examination
5. **Glass:** Composition, Types, Fractures, Examination
6. **Cement, Mortar and Concrete:** General Composition, Forensic Analysis
7. **Computer Forensics: Introduction, Types of Computer crimes, Digital evidence- Seizure, Acquisition and Forensic examination**
8. **Mobile Phone Forensics**

Unit – VIII

1. **Fingerprints:** History, Characteristics, Types, Classification, Preservation, Development, Lifting and Comparison, Examination of Chance Prints, Computerization of Fingerprints, AFIS
2. **Track Marks:** Foot Prints, Shoe Prints, Tire Marks, Their Preservation & Casting, Comparison, Skid marks. Gait pattern
3. **Biometric Systems of Identification and its relevance**
4. **Voice Analysis:** Introduction, Significance, Structure of Human Voice apparatus, Voice spectrography, Voice analysis, Legal aspects and limitations

Unit – IX

1. **Documents:** Definition, Types, Preliminary examination of documents
2. **Reproduction** of documents through photographic and mechanical means and their examination
3. **Examination** of Alterations such as Erasures, Obliterations & Additions
4. **Indentations, Secret writings and Charred documents**
5. **Inks, Papers and their scientific examinations with modern methods**
6. **Age of documents**
7. **Examination of Typescripts, Printed matter including currency notes and lottery tickets. Mechanical impressions**
8. **Hand writings: Class and Individual characteristics of Handwritings, Factors affecting handwritings, Standard samples for comparison, Comparison of hand-written texts**
9. **Anonymous and disguised writings**
10. **Identification of hand writings, signatures, detection of forged signature and forgeries**
11. **Examination of Credit Cards and Similar materials**

Unit –X

1. **Modes & Manner of deaths, Sexual offences and its medicolegal importance, Amendments in law related to sexual offences**
2. **Post – mortem examination and Post – mortem changes, Estimation of time since death**
3. **Injuries & Wounds: Types, Medicolegal importance, Gunshot wounds**
4. **Determination of Species of Origin, Sex , Age, Stature, and individual identification through skeletal remains**
5. **Identification through Skull superimposition and facial reconstruction**
6. **Human dentition, Type of teeth, determination of Age, Bite marks**
7. **Forensic Entomology: Introduction, Insects of forensic importance, Insects on Carrion, Forensic applications**