# FORENSIC TEKS QUICK REFERENCE

## Professional Standards/Employability

| F.1 | Demonstrates professional standards/employability skills such as **good attendance**, **punctuality**, ethical conduct, **meeting deadlines**, and working toward personal and team goals. |
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## Safety & Laboratory/Field Investigations

| F.2A | **Ask questions** and define problems based on observations or information in text, phenomena, models, or investigations. |
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| F.2B | Apply scientific practices to **plan and conduct** descriptive, comparative, and experimental investigations and **use engineering practices** to design solutions to problems |
| F.2C | Use appropriate **safety** equipment & practices during lab, classroom, and field investigations |
| F.2D | Use **appropriate tools** such as calculators, computers, internet access, digital cameras, video recording devices, meter sticks, metric rulers, measuring tapes, digital range finders, protractors, calipers, microscopes, hand lenses, stereomicroscopes, digital scales, dissection equipment, glassware, PPE, chemicals, biological specimens, prepared evidence slides and samples, evidence packaging and tamper resistant tape, evidence tents, crime scene tape, L-rulers, ABFO scales, ALS and ALS goggles, blood specimens, blood presumptive tests, glass samples, human and non-human bones, fingerprint brushes and powders, lifting tapes and cards, ten-print cards, ink pads, swabs with containers, gloves, and relevant and necessary kits. |
| F.2E | **Collect quantitative data** with accuracy and precision using SI and US customary units and qualitative data as evidence. |
| F.2F | **Organize** quantitative and qualitative data using appropriate methods such as reports, graphs, tables, or charts. |
| F.2G | **Develop and use** models to represent phenomena, systems, processes, or solutions to engineering problems |
| F.2H | Distinguish between scientific **hypotheses, theories,** and **laws.** |

## Analyzing and Interpreting Data

| F.3A | Identify advantages and limitations of **models** such as their size, scale, properties, and materials. |
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| F.3B | **Analyze** data by identifying significant statistical features, patterns, sources of error, and limitations. |
| F.3C | Use **mathematical calculations** to assess quantitative relationships in data. |
| F.3D | **Evaluate** experimental and engineering **designs**. |

## Evidence-Based Explanations

| F.4A | **Develop explanations** and **propose solutions** supported by data and models and consistent with scientific ideas, principles, and theories. |
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| F.4B | **Communicate** explanations and solutions individually and collaboratively in a variety of settings and formats. |
| F.4C | Engage respectfully in **scientific argumentation** using applied scientific explanations and empirical evidence. |

## Recognize the Importance of Research

| F.5A | **Analyze, evaluate, critique** scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing. |
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| F.5B | Relate the **impact of past and current research** on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists and engineers. |
| F.5C | **Research and explore resources** such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a STEM field. |

## History of Forensic Science

| F.6A | Analyze **historical development** and current advancements of different forensic science disciplines such as forensic biology, anthropology/odontology, forensic chemistry, trace evidence, ballistics, fingerprints, digital forensics, and questioned documents. |
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| F.6B | Explain **significant historical and modern contributions** to the development of forensic science by contributors such as Edmond Locard, Mathieu Orfila, Francis Galton, Edwin Henry, and Alec Jeffreys. |

## Analyze Legal Aspects of Forensics

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| F.7A | Summarize the **ethical standards** required of a forensic science professional. |
| F.7B | Identify and explain knowledge of terminology and procedures employed in the criminal justice system as they pertain to **chain of custody procedure** for evidence |
| F.7C | Identify and explain knowledge of terminology and procedures employed in the criminal justice system as they pertain to **expert witness testimony**. |
| F.7D | Research and discuss the **effect of biases** such as confirmation bias and framing cognitive bias on evidence collection, forensic analysis, and expert testimony |
| F.7E | Compare the admissibility of expert witness testimony in terms of the **Frye Standard** and the **Daubert Standard** under federal rules of evidence. |

## Careers in Forensics

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| F.8A | Explore and describe discipline-specific requirements for **careers** in forensic science, including collegiate course requirements, licensure, certifications, and physical and mental capabilities. |
| F.8B | Differentiate the **roles and responsibilities** of professionals in the CJS, including forensic scientists, crime scene investigators, criminologists, court systems personnel, and medicolegal death investigators. |
| F.8C | Differentiate the **functions** of various forensic science disciplines such as forensic biology, chemistry, trace evidence, ballistics, fingerprints, digital forensics and questioned documents |

## Procedures of Crime Scene Investigation

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| F.9A | Explain the roles and tasks needed to **complete a crime scene examination**, which may require collaboration with outside experts and agencies, and demonstrate the ability to work as a member of a crime scene team. |
| F.9B | Develop a detailed, **technical written record** based on observations and activities, documenting the crime scene examination. |
| F.9C | Discuss the elements of criminal law that guide **search and seizure** of persons, property, and evidence. |
| F.9D | Conduct primary and secondary systematic search of a simulated crime scene for physical evidence utilizing **search patterns** such as spiral, line, grid, and zone. |
| F.9E | **Document a crime scene** using photographic or audiovisual equipment. |

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| F.9F | Generate a physical or digital crime scene sketch, including coordinates or measurements from fixed points, compass directions, scale of proportion, legend-key, heading, and title block. |
| F.9G | Demonstrate proper techniques for collecting, packaging, and preserving physical evidence found at a crime scene while maintaining documentation, including chain of custody. |

## Fingerprints

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| F.10A | Compare the three major fingerprint patterns of arches, loops and whorls. |
| F.10B | Identify the minutiae of fingerprints, including bifurcations, ending ridges, dots, short ridges, enclosures/islands. |
| F.10C | Distinguish between patent, plastic, and latent fingerprints. |
| F.10D | Perform procedures for developing and lifting latent prints on nonporous surfaces such as cyanoacrylate and fingerprint powders. |
| F.10E | Perform procedures for developing latent prints using chemical processes on porous and adhesive surfaces with chemicals such as ninhydrin and crystal violet and documenting the results via photography |
| F.10F | Explain the IAFIS and describe the implications of the Next Generation Identification (NGI) systems. |

## Impression Evidence

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| F.11A | Analyze the class and individual characteristics of tool mark impressions and the recovery and documentation of surface characteristics such as wood or metal. |
| F.11B | Analyze the class and individual characteristics of footwear impressions and the recovery and documentation of surface characteristics such as soil or organic plant material. |
| F.11C | Analyze the class and individual characteristics of tire tread impressions and the recovery and documentation of surface characteristics such as soil or organic plant material. |
| F.11D | Compare impression evidence collected at a simulated crime scene with the known impression |

## Hair and Fiber

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| F.12A | Demonstrate how to collect hair and fiber evidence at a simulated crime scene. |
| F.12B | Perform the analysis of hair and fiber evidence using forensic science methods such as microscopy and flame testing. |
| F.12C | Compare the microscopic characteristics of human hair and non-human hair, including medulla, pigment distribution and scales. |

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| F.12D | Describe and illustrate the different microscopic characteristics used to determine the origin of a human hair sample. |
| F.12E | Differentiate between natural and synthetic fibers. |

## Glass Evidence

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| F.13A | Demonstrate how to collect and preserve glass evidence. |
| F.13B | Compare the composition of various types of glass such as soda lime, borosilicate, leaded, and tempered. |
| F.13C | Determine the direction of a projectile by examining glass fractures. |
| F.13D | Define refractive index and explain how it is used in forensic glass analysis. |

## Questioned Documents

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| F.14A | Research and explain different types of examinations performed on digital and physical evidence such as digital data recovery, counterfeiting, ink, and paper analysis. |
| F.14B | Investigate and describe the security features incorporated in U.S. and foreign currency to prevent counterfeiting. |
| F.14C | Perform handwriting comparisons of an unknown sample with exemplars by analyzing characteristics such as letter, line, and formatting. |

## Firearms & Ballistics

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| F.15A | Describe the mechanism of modern firearms such as long guns and handguns. |
| F.15B | Identify the components and characteristics of bullet and cartridge cases. |
| F.15C | Describe the composition of and method of analysis for gunshot residue and primer residue. |
| F.15D | Conduct and calculate trajectory analysis of bullet strikes within a simulated crime scene. |
| F.15E | Identify and recognize the type of information available through the National Integrated Ballistics Information Network. |

## Controlled and Illicit Drugs

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| F.16A | Differentiate between toxicological analysis and controlled substance analysis as they relate to the method of collection and impact on the body. |
| F.16B | Classify controlled substances using the schedules under the Controlled Substances Act. |
| F.16C | Identify unknown substances using presumptive and confirmatory procedures such as microchemical/color indicating reagent field tests, microscopy, chromatography, and spectrophotometry. |

## Toxicology

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| F.17A | Explain the absorption, distribution, metabolization, and elimination of toxins such as alcohol, prescription drugs, controlled substances, and carbon monoxide through the body. |
| F.17B | Describe presumptive and confirmatory lab procedures as they relate to toxicological analysis such as head space analysis, solid-phase analysis, gas chromatography-mass spectrometry (GC/MS), color tests, and immunoassays. |
| F.17C | Interpret results from presumptive and confirmatory lab procedures, including GC/MS and their implications. |
| F.17D | Explain the precautions necessary in the forensic laboratory for proper preservation of biological specimens. |

## Blood Spatter

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| F.18A | Analyze blood stain patterns based on surface type and appearance such as size, shape, distribution, and location in order to determine the mechanism by which the patterns are created. |
| F.18B | Explain methods of chemically enhancing latent blood patterns using reagents such as Blue Star or Amido Black. |
| F.18C | Conduct and interpret blood presumptive tests for various biologicals such as phenolphthalein and tetramethylbenzidine (TMB). |
| F.19B | Identify the red blood cell antigens and antibodies as they relate to human blood types. |

## Biological Evidence

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| F.19A | Identify different types of biological samples and practice proper collection and preservation techniques. |
| F.19C | Describe the structure of DNA molecule and its function. |
| F.19D | Explain the analytical procedure for generating a DNA profile, including extraction, quantification, amplification, and capillary electrophoresis. |
| F.19E | Explain the different methodologies surrounding the different types of DNA analysis such as STRs, Y-STRs, mtDNA, and SNPs. |
| F.19F | Interpret the components of an electropherogram. |
| F.19G | Explore the databasing systems associated with DNA such as CODIS and ancestry-based databasing systems. |

## Medicolegal Death Investigation

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| F.20A | Explain the principles of rigor, algor, and livor mortis and how they apply to deceased persons. |

| F.20B | Differentiate between the types of wound patterns such as lacerations and blunt force trauma resulting from stabbings, bludgeoning, gunshots, and strangulations. |
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| F.20C | Determine the cause and manner of death from an autopsy report obtained through resources such as case studies, simulated autopsies, and dissections. |
| F.20D | Determine the approximate time of death using entomology. |

## Anthropology & Odontology

| F.21A | Identify the major bones of the human skeletal system. |
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| F.21B | Compare composition and structure of human and non-human bones. |
| F.21C | Describe the collection and preservation methods for bone evidence. |
| F.21D | Explain the characteristics of the human skeletal system indicative of specific biological sex and approximate range of age and height. |
| F.21E | Explain how human remains are identified through dental records such as dentures, x-rays, and implants. |