

## **FORENSIC SCIENTIST TECHNICAL LEADER**

### **JOB DESCRIPTION**

**Classification Responsibilities:** A Forensic Scientist Technical Leader performs highly specialized forensic evaluations and/or examinations in connection with the identification and comparison of physical evidence submitted to the Police Department Forensic Services. Technical Leaders are characterized by breadth of knowledge and experience in analytical methods, crime scene processing, complex casework, or evidence processing. Technical Leaders provide quality assurance program support through technical oversight and leadership in the forensic disciplines. Technical Leaders are casework performing analysts who report directly to the unit supervisor and work in collaboration with the Quality Manager in the performance of their assigned quality assurance duties. Technical Leaders are responsible for monitoring the quality of analysis, including compliance with the ISO/IEC 17025-Requirements and the American National Standards Institute (ANSI) National Accreditation Board (ANAB) Forensic Science Testing and Calibration Laboratories Accreditation Requirements, within their disciplines and make recommendations for quality improvement. Working in conjunction with the QM, the Technical Leader is responsible for the quality assurance program for their respective units. As such, the Technical Leader is the primary point of contact for the Quality Manager and analysts in the discipline regarding technical issues. Forensic Scientist Technical Leaders may be established for the following forensic areas: Biology/DNA (has additional responsibilities and authorities outlined in the Federal Bureau of Investigations [FBI] Quality Assurance Standards for DNA Testing Laboratories), Controlled Substances, Fingerprint Identification, Firearms/Tool marks, Latent Print Comparisons, Toxicology – Blood Alcohol, and/or Toxicology – Blood Drug.

**Technical Leader Responsibilities Include:** Annual review of unit procedure and training manuals and participation in the annual Forensic Services Biannual Management Review and making recommendations for changes to verify that the discipline procedure and training manuals, and the quality system manuals accurately reflect established standards and comply with the following standards (as applicable): ISO/IEC 17025, ANAB Forensic Science Testing and Calibration Laboratories Accreditation Requirements, and the FBI Quality Assurance Standards for Forensic DNA Testing Laboratories; providing feedback to unit members regarding technical procedures, training program requirements, novel technologies, national forensic science discipline trends and issues, and quality assurance (QA)/quality control (QC) standards; performing review of casework within the discipline to evaluate consistent use of technical procedures within each discipline and compliance to quality assurance standards with the Unit Supervisor, assigned trainer, and QM, developing the training plan for analysts in the discipline and reviewing the training plan to confirm compliance with discipline training program requirements with the assigned trainer and Unit Supervisor, evaluating, reviewing, and documenting the analyst's progress toward meeting the training plan goals, making recommendations for supplemental training or retraining as needed, and notifying the Unit Supervisor in writing that the trainee has completed the training plan; researching, reviewing, and monitoring quality control practices, best practices, or peer consensus within the discipline and making recommendations to the Quality Manager for corrective or preventive action for improvement and/or for analytical processes/procedures not explicitly outlined in the discipline procedure manual, the technical leader will determine best practice; designing and submitting proficiency test plans to the Quality Manager and monitoring results; and researching and evaluating new analytical procedures, equipment, or technologies and making recommendations to the Quality Manager for implementation within the discipline, overseeing the

development of research and validation projects, and endorsing any proposed research or validation

project prior to supervisor approval. With the Quality Assurance Manager, monitoring research or validation projects to evaluate progress and reviewing research and validation data; and performing an annual review to address discipline specific technical needs (examples: training, equipment, resources) involving research and evaluation of new technologies, training, equipment, and QA/QC practices and requirements. The plan recommendations are presented to management for consideration and incorporation into Forensic Services Biennial Management Review; serving as the primary point of contact for the Quality Manager and analysts for resolving daily technical issues and problem solving within a given discipline and assisting with resolving any technical differences of opinion; and assisting the Quality Manager with performing root cause analysis involving technical nonconformities to discipline procedures and/or ISO standards. Evaluating the nonconformity, performing root cause analysis, and making recommendations for corrective action or preventive action; serving as the liaison between the unit members and the Quality Manager and making sure effective communication occurs with all members of the discipline, and with management; and has delegated authority from the Quality Manager to terminate testing in their discipline or an individual in the event of a major technical problem with either a technical procedure or instrument/equipment. Working to resolve the issue, performing root cause analysis, and making recommendation for corrective and/or preventive action. Communicating such action through the appropriate chain of command and informing the Unit supervisor of all technical operations.

**In addition to the Technical Leader responsibilities, each Forensic Scientist Technical Leader is responsible for performing the following casework in their unit assignments:**

***Biology Unit Assignment:*** A Forensic Scientist Technical Leader assigned to the Biology Unit performs serological and/or deoxyribonucleic acid (DNA) analysis on items of evidence related to police investigations. Duties include: visual examination, microscopic examination, and/or serological testing on a variety of evidence items to examine for the presence of blood, semen, saliva, hair, and other potential biological material; preparation of samples for DNA analysis, DNA extraction using manual or robotic techniques, and quantitation using Real Time PCR technology, Polymerase Chain Reaction (PCR) for the amplification of DNA extracts using a variety of DNA typing kits, and DNA typing using Capillary Electrophoresis. The incumbent will interpret DNA typing results to include making comparisons to known profiles, making determinations about the inclusion or exclusion of contributors, and making determinations about profiles to be entered into the Combined DNA Index System (CODIS). Additionally, the incumbent will utilize statistical databases to make determinations about the frequency of occurrence of profiles developed in the laboratory. The incumbent must use significant judgment in determining tests performed and items tested. Incumbents may be responsible for responding to crime scenes for Bloodstain Pattern Interpretation or they may be requested to interpret bloodstain patterns in the laboratory based upon photographs and evidence items collected from crime scenes. Incumbents may also design and conduct experiments related to specific case issues. This class performs related duties as required.

***Controlled Substances Unit Assignment:*** A Forensic Scientist Technical Leader in the Controlled Substances Unit performs forensic examinations of physical evidence submitted to Forensic Services related to the identification of controlled substances and fire debris analysis. Duties include performing qualitative analysis of suspected drug samples and trace evidence of fire debris. Incumbents will perform macroscopic examinations, microscopic examinations, weight measurements, preliminary color tests, instrumental tests to include gas chromatography/mass spectrometry (GC/MS) and infrared spectrophotometry (FTIR/ATR), thin layer chromatography (TLC), and microcrystalline tests, as well as

interpret instrumental data. Incumbents will provide support for the K9 units and the field drug testing program including training of police personnel, proficiency testing, maintenance of instruments, and distributing the test kits. This class performs related duties as required.

***Firearms Unit Assignment:*** A Forensic Scientist Technical Leader assigned to the Firearms Unit performs highly specialized forensic examinations of physical evidence submitted to the Forensic Services related to firearms and tool mark identification. Duties include: performing examinations of firearms, ammunition, ammunition components, tools, tool marks, and other firearms or tool related evidence. Incumbents may perform examinations on clothing, bedding, and other surfaces for the presence of gunshot residues or powder patterns, muzzle to target distance determinations, chemical restoration of obliterated serial numbers, cartridge case ejection pattern testing, and long-range trajectory evaluations. Incumbents may also design and conduct experiments related to specific case issues. Incumbents are responsible for responding to crime scenes to assist with the documentation and collection of evidence, chemical testing for trace metals, projectile trajectory determination, reconstruction and diagramming of shooting events, and providing assistance of a technical nature to investigators. Incumbents are also responsible for entering and searching data in the National Integrated Ballistics Information Network (NIBIN). This class performs related duties as required.

***Latent Print Unit Assignment:*** A Forensic Scientist Technical Leader in the Latent Print Unit performs forensic examinations of physical evidence submitted to the Forensic Services related to friction ridge comparative analysis. Duties include: taking exemplars for criminal and non-criminal matters, including deceased persons; making accurate conclusions regarding friction ridge comparative analysis; and operating the Arizona Automated Fingerprint Identification System (AZAFIS) and Next Generation Identification (NGI). Authorized personnel may perform shoe and tire comparisons. This class is responsible for performing related duties as required.

***Toxicology Unit Assignment:*** A Forensic Scientist Technical Leader in the Toxicology unit performs forensic examinations of blood and urine related to police investigations. Duties include: blood volatile analysis using headspace gas chromatography; enzyme-linked immunosorbent assay (ELISA) screening of blood and urine for drugs of abuse; confirmations of drugs of abuse from blood and urine utilizing GC/MS, gas chromatography tandem mass spectrometry (GC/MSMSMS), liquid chromatography tandem mass spectrometry (LC/MSMSMS), sample preparation using solid phase extraction (SPE) and associated equipment (positive pressure manifolds and sample concentrators), Liquid/Liquid extractions, pipetting, and centrifuges; documentation of quality assurance and controls, maintenance logs, and results entered into a Laboratory information management system (LIMS); and may be involved in training of new analysts (Forensic Scientist I) and validation of appropriate new methods. This class also performs related duties as required.

***Common Duties:*** A Forensic Scientist Technical Leader operates, maintains, programs, and interprets data from highly technical and/or computerized instrumentation, such as an automated blood alcohol analysis system, a gas chromatograph/mass spectrometer, or DNA-related equipment, (***depending on assignment***). Further responsibilities include: preparing and conducting officer training; assisting with the development and monitoring of a quality assurance program; conducting field investigations at crime scenes; troubleshooting; maintenance and validation of instrumentation; method development and validation; consulting and coordinating with experts, police officers, and attorneys; writing technical, scientific reports; and providing expert testimony in court. This class is responsible for performing related duties as required.

**Distinguishing Features:** Forensic Scientist Technical Leader is a professional class in the Forensic Services Laboratory, which involves work in specialized areas of forensic science, such as fire debris, drug identification, toxicology, blood alcohol, serology, DNA testing, and/or firearm, tool mark, and impression examination. This position is part of the management team in Forensic Services. An employee in this class may conduct field investigations at crime scenes to search for, collect, and preserve evidence for laboratory analysis; and reconstruct situations and physical evidence of a crime in the demonstration of proof of the connection of persons, instruments, or materials with the crime. Supervision is received from a Forensic Scientist Supervisor and work is reviewed through meetings, reports, and results achieved. All work is performed in accordance with established departmental policies and procedures, federal/state guidelines, and accreditation standards. This position involves working with chemicals and other hazardous materials. This class is FLSA exempt-professional.

## QUALIFICATIONS

**Employee Values:** All employees of the City of Mesa are expected to uphold and exhibit the City's shared employee values of Knowledge, Respect, and Integrity.

**Minimum Qualifications Required.** Graduation from an accredited college or university with a Bachelor's or advanced degree in Biology/Biochemistry, Chemistry, Forensic Science, or closely related natural science. Job related experience may substitute for the degree requirements on a year-for-year basis. At least four years' experience as a Forensic Scientist or equivalent in a recognized laboratory actively engaged in the forensic sciences in the area that Technical Leader is representing; experience testifying in court as an expert witness; and state-of-the-art expertise in a specialized area of forensic science as described in the Distinguishing Features section. In addition, the following disciplines have specific minimum educational requirements: **Blood Alcohol:** 24 credit hours of college coursework in chemistry completed successfully. **Controlled Substances:** 20 credit hours of college coursework in chemistry completed successfully. **DNA:** A Master's Degree in a biology, chemistry, or forensic science-related area; 12 semester hours or equivalent credit hours including a combination of graduate and undergraduate course work or classes covering biochemistry, genetics, molecular biology, and statistics or population genetics. Of the 12 semester hours, a minimum of three semester credit hours must be a graduate-level course. The DNA Technical Leader must meet the minimum qualifications listed in the FBI Quality Assurance Standards for DNA Testing Laboratories. **Toxicology:** 24 credit hours of college coursework in chemistry completed successfully. **Latent Prints:** 24 credit hours of college coursework in STEM (Science, Technology, Engineering, or Math) completed successfully.

**Special Requirements.** Because of the confidential, sensitive nature of information handled, successful completion of a background investigation and polygraph examination is required. Must possess a valid Class D Arizona Driver's License by hire date.

**Substance Abuse Testing.** Due to the safety and/or security sensitive nature of this classification, individuals shall be subject to pre-employment or pre-placement alcohol, drug and/or controlled substance testing as outlined in City policy and procedures.

**Preferred/Desirable Qualifications.** Seven plus years of experience in the discipline that the Technical Leader is representing. Experience as a Criminalist/Forensic Scientist in an internationally accredited laboratory actively engaged in the forensic sciences. **Firearms Assignment:** 20 credit hours of college

coursework in chemistry completed successfully, experience with firearms examination, membership in the Association of Firearm and Toolmark Examiners in good standing, and completion of the National Firearms Examiner Academy.

## **ESSENTIAL FUNCTIONS**

**Communication:** Communicates with the general public, other City employees, management, public officials, sworn officers, attorneys, officers of the court, and vendors. Communicates with other experts in the field to exchange information on all types of forensic methodologies. Consults and coordinates with other forensic scientists, forensic latent print examiners, police officers, attorneys, private experts, and others regarding the analysis, comparison, and identification of physical evidence. Instructs and trains law enforcement officers in a classroom setting regarding the collection of evidence and forensic science methodologies. Prepares written scientific examination reports with clearly organized thoughts using scientific nomenclature, proper sentence structure, punctuation, and grammar in order to represent laboratory results. Assists the Forensic Scientist Supervisor with instruction and training of laboratory personnel, quality assurance implementation and monitoring, case review, laboratory safety, and expediting day-to-day workflow within the unit. Provides feedback to unit members regarding technical procedures, training program requirements, novel technologies, national forensic science discipline trends and issues, and QA/QC standards.

**Manual/Physical:** Inspects and evaluates equipment, objects, information, and work-related conditions to determine compliance with prescribed operating and safety standards, regulations, and guidelines including manufacturer's specifications on computerized scientific equipment and national laboratory accreditation standards. Distinguishes colors to determine results of drug test/analyses and/or chemical tests. Uses common hand tools such as a screwdriver and various instrument maintenance tools to maintain, set up, and clean the laboratory instruments. Installs and replaces computer software and scientific instrument parts to maintain and update laboratory equipment. Enters data or information into a personal or laboratory computer in order to complete and analyze scientific examinations. Operates a motor vehicle requiring a standard Class D Arizona Driver's License to respond to crime scenes, attend meetings, and provide court testimony. Prepares graphs, charts, and/or diagrams to perform scientific examinations. Works with chemicals using specialized, non-routine, protective equipment to perform laboratory analyses.

**Mental:** Conducts research and analyzes data to perform scientific examinations. Develops laboratory analytical procedures. Performs mathematical and statistical computations in order to complete scientific examinations. Interprets graphs, charts, and mathematical formulas to check scientific reports. Comprehends and makes inferences from written material such as laboratory reports, scientific journals/literature, and testimony transcripts to maintain current expertise in the forensic field. Prioritizes own casework. Performs review of casework within the discipline to evaluate consistent use of technical procedures within each discipline and compliance to quality assurance standards with the Unit Supervisor, assigned trainer, and QM. Develops the training plan for analysts in the discipline and reviews the training plan to confirm compliance with discipline training program requirements with the assigned trainer and Unit Supervisor. Evaluates, reviews, and documents the analyst's progress toward meeting the training plan goals, making recommendations for supplemental training or retraining. Researches, reviews, and monitors quality control practices. Performs an annual review to address discipline specific technical needs. Learns job-related material through on-the-job training and in a

classroom setting regarding updated and new forensic laboratory techniques.

**Knowledge/Skill/Abilities:**

Knowledge of:

International accreditation standards;  
Occupational Safety and Health Administration (OSHA) safety requirements;  
Safety Data Sheets (SDS);  
applicable Arizona State Revised Statutes;  
applicable scientific technical working groups requirements (for discipline/unit assigned);  
applicable professional organizations (for discipline/unit assigned);  
the principles, methods, materials, equipment, and techniques of forensic science;  
the principles of chemistry, physics, biology/biochemistry, and mathematics/statistics as related to forensic science;  
crime scene procedures;  
recent developments, current literature, and sources of information in the forensic science field;  
state and federal statutes and case law covering contraband, drugs, and the use of physical evidence in court; and  
the rules of criminal procedures concerning time limits, discovery, evidence, and expert witnesses.

Skill in the use of specialized forensic laboratory equipment and in demonstrating tests and examinations to others.

Ability to:

carefully follow verbal and written instructions;  
secure the cooperation of others in difficult work situations;  
withstand intense examination in court as an expert on the laboratory analysis evidence;  
make accurate observations and records of test results;  
assist other laboratory personnel with the analysis of critical evidence and interpretation of results;  
supervise a unit of the laboratory in the absence of the unit's Forensic Scientist Supervisor; and  
establish and maintain effective working relationships with department personnel and outside agencies.

The duties listed above are intended only as general illustrations of the various types of work that may be performed. Specific statements of duties not included does not exclude them from the position if the work is similar, related, or a logical assignment to the position. Job descriptions are subject to change by the City as the needs of the City and requirements of the job change.

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