



Designation: ~~E2917–19a~~ **E2917 – 24**

An American National Standard

Standard Practice for Forensic Science Practitioner Training, Continuing Education, and Professional Development Programs¹

This standard is issued under the fixed designation E2917; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Some material in this practice is based on the Technical Working Group for Education and Training in Forensic Science, National Institute of Justice (TWGED, NIJ), Special Report, *Education and Training in Forensic Science: A Guide for Forensic Science Laboratories, Educational Institutions, and Students* (1).²

1. Scope

1.1 This practice provides foundational requirements for the training, continuing education, and professional development of forensic science practitioners to include training criteria toward competency, documentation, and implementation of training, and continuous professional development. This information is intended for forensic science service providers to help establish a training framework with program structure and content; for forensic science practitioners as they acquire and maintain their knowledge, skills, and abilities (KSAs); for subject matter experts when developing discipline specific training practices; and for training programs to manage and support the continuous development of their employees.

1.2 This practice outlines minimum training criteria and provides general information, approaches, and resources for all disciplines. The standard would complement additional specific requirements for each forensic science discipline (for example, relevant degree programs, higher education) if developed by subject matter experts in their respective fields. Discipline specific training programs should address the content and means for developing and testing competency for each applicable topic identified in Practice E2917.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

¹ This practice is under the jurisdiction of ASTM Committee E30 on Forensic Sciences and is the direct responsibility of Subcommittee E30.11 on Interdisciplinary Forensic Science Standards.

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² The boldface numbers in parentheses refer to a list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[E620 Practice for Reporting Opinions of Scientific or Technical Experts](#)

[2.2 ISO Standards:⁴](#)

[ISO 17025 General Requirements for the Competence of Testing and Calibration Laboratories](#)

3. Terminology

3.1 Definitions:

3.1.1 *apprenticeship, n*—a relationship where an individual works for an entity while learning skills **(1)**.

3.1.2 *competency, n*—demonstration that a forensic science practitioner has acquired and demonstrated specialized knowledge, skills, and abilities (KSAs) in the standard practices necessary to conduct examinations in a discipline or category of testing prior to performing independent casework **(2)**.

3.1.3 *continuing education, n*—the mechanism through which a forensic science practitioner increases or updates knowledge, skills, or abilities (KSAs), reinforces knowledge, or learns of the latest research, developments, or technology related to his or her profession.

3.1.4 *forensic science practitioner, n*—an individual who (1) applies scientific or technical practices to the recognition, collection, analysis, or interpretation of evidence for criminal and civil law or regulatory issues; and (2) issues test results, provides reports, or provides interpretations, conclusions, or opinions through testimony with respect to such evidence **(3)**.

3.1.5 *forensic science service provider, n*—a forensic science agency or forensic science practitioner providing forensic science services **(3)**.

3.1.6 *internship, n*—an in-depth educational or training program that offers a period of supervised practical experience in a forensic science setting **(21)**.

3.1.7 *knowledge, skills, and abilities (KSAs), n*—the level of information, qualifications, and experience needed to perform assigned tasks.

3.1.7.1 Discussion—

Knowledge refers to acquired understanding of the principles and practices related to a particular job, *skills* refer to acquired analytical and psychomotor behaviors, and *abilities* refer to the talents, observable behaviors, or acquired dexterity.

<https://standards.iteh.ai/catalog/standards/astm/69bef50d-46c3-4c6a-a25f-d2398079d69d/astm-e2917-24>

3.1.8 *objectives, n*—descriptions of expectations that learners must be able to exhibit before they are considered competent; objectives outline:

3.1.8.1 *condition, n*—the environment or circumstances in which the performance must be accomplished;

3.1.8.2 *desired performance, n*—what must be known or demonstrated; and

3.1.8.3 *standard, n*—the level of proficiency required to demonstrate an acceptable level of competence for the task or job **(4)**.

3.1.9 *professional development, n*—the mechanism through which a forensic science practitioner improves personal skills, successfully handles increasing responsibility, makes contributions to the profession, and reinforces ethical behaviors.

3.1.10 *training, n*—the formal, structured process through which a forensic science practitioner reaches a level of scientific competency after acquiring the knowledge, skills, and abilities (KSAs) required to conduct specific forensic analyses.

4. Significance and Use

4.1 This practice separately outlines criteria and implementation approaches for the training, continuing education, and professional development of forensic science practitioners. The use of this practice can help establish training programs designed to achieve competency in targeted disciplines. The standard also describes measures to maintain competency through continuing education/professional development.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

4.2 This practice provides a framework for extending learning opportunities to promote and achieve higher standards of professional practice in forensic science.

4.3 This practice is not intended to be inclusive of all possible options nor to address the challenges of a particular discipline.

4.3.1 This practice does not address proficiency testing programs or specific requirements of professional certification and licensure bodies, although the foundational requirements addressed may be essential elements for such programs.

4.3.2 This practice is not intended to supersede requirements from professional certification and licensure bodies.

4.3.2.1 Licensing and certifying bodies in a number of fields typically impose continuing education and professional development requirements on their license or certificate holders. Such requirements are intended to encourage professionals to expand their knowledge base and keep abreast of new developments. Depending on the field, these requirements might be satisfied through internal training; completion of college, university, or extension coursework; or through attendance at conferences and seminars. Individuals in such positions should obtain and document their on-going training and development as required by their licensing or certifying body.

5. Documentation

5.1 *Training, Education, and Development Record*—Documentation is mandatory. The employer shall keep an official training record for each employee and provide the trainee with a copy of or access to the records. The trainee is encouraged to keep a personal copy of the training record and should do so if not employed by a forensic science service provider. At a minimum, the record shall contain:

5.1.1 Documentation that any position requirements have been satisfied (such as a transcript, if a degree or specific coursework is a prerequisite for the job);

5.1.2 A certificate or statement of successful completion of the initial training, with documentation that all required KSAs have been acquired relative to the stated objectives;

5.1.3 Documentation of education, subsequent training, or professional development. This might include any earned academic or continuing education credits or certificates; and

5.1.4 Unambiguous documentation of the total number of hours or days involved to achieve or maintain professional development.

6. Training-to-Competency Programs

6.1 This section applies to the initial training to competency. This practice provides a common framework that shall be used across forensic disciplines to help ensure that programs are meeting minimum criteria. For the development of discipline-specific training standards, forensic science service providers and subject matter experts shall establish the minimum competency requirements for each element of training in 6.3 and include discipline-specific examples and references, as appropriate.

6.2 Model training criteria shall include:

6.2.1 Entry qualifications that include minimum academic credentials/requirements (for example, bachelor's degree in a relevant program), and

6.2.2 Program structure and content that include the following documented components:

6.2.2.1 ~~Learning objectives,~~ Objectives,

6.2.2.2 Instructor (however named) qualifications,

6.2.2.3 Student (however named) requirements,

6.2.2.4 Syllabus,

~~5.2.2.5 Performance goals,~~

6.2.2.5 Periodic assessments,

6.2.2.6 Period of supervised casework/mentorship,

6.2.2.7 Program assessment mechanisms (for example, instructor and student feedback), and

6.2.2.8 Competency testing, testing mechanisms and minimum acceptance criteria.

6.2.2.9 Evaluation of the training program to assess its efficacy and relevance within a four-year period.

6.3 Program content shall be designed to include both core and discipline-specific elements.

6.3.1 Core specific elements shall include the following:

6.3.1.1 *Standards of conduct* and professional ethics.

6.3.1.2 *Safety*, including biological, chemical, and physical hazards.

6.3.1.3 *Policy*, including administrative, standard operating procedures, quality assurance and control, non-conformance remediation procedures, documentation and record control, accreditation standards and requirements, certification/licensure standards, regulatory compliance, and security issues.

6.3.1.4 *Legal issues*, including expert testimony, depositions, rules of evidence, criminal and civil law procedures; legal obligations to disclose information (5) and to preserve evidence; and evidence authentication (for example, chain-of-custody).

6.3.1.5 *General forensic concepts* including evidence handling, interdisciplinary issues (for example, recognition, collection, and preservation of evidence), and chain of custody.

6.3.1.6 *Communication*, including written, oral, and nonverbal communication skills, report writing and interpretation, exhibit and pretrial preparation, and trial presentation.

6.3.1.7 *Human factor issues*, including factors that affect conclusions and the workplace environment, such as bias (for example, cognitive, contextual, confirmation); confirmation, association); the process to determine what information is relevant to a task; fatigue; ergonomics; and response to errors (for example, putative vs.versus learning opportunity policies).

6.3.2 Discipline-specific elements shall be incorporated as appropriate. Topics include: appropriate, including but not limited to:

6.3.2.1 History and basic theory of the discipline.

6.3.2.2 Relevant literature.

6.3.2.3 Nature and properties of examined evidence type and forms in which it may be submitted.

6.3.2.4 Evidence handling techniques.

6.3.2.5 Methodologies and validation ~~studies~~studies, to include method limitations.

6.3.2.6 ~~Associated instrumentation~~Instrumentation and performance monitoring.

6.3.2.7 Statistics and probability (~~including~~ such as uncertainty, population inferences, etc.).

6.3.2.8 ~~Interpretation~~Interpretation (including documenting observations, data, and calculations).

6.3.2.9 Knowledge of related fields.