

Deadline of Submission of Comments: 8-Jul-24

Document Number: ANSI/ASB Std 124

Document Title: Minimum Requirements and Recommendations for a Firearm and Toolmark Examiner Training Program

Comment #	Document Section	Type of Comment	Current Document Wording	Proposed Revision	Revision Justification	Final Resolution
		E-Editorial T-Technical				
1	3.8, 3.9	T	no minimum educational requirements (other than continuing ed)	Describe, with specificity, the educational requirements for a trainee in this discipline. It is important that this standard articulate a minimum education requirement for trainees (e.g. STEM degree with coursework in physics, statistics, materials science...), particularly given the potential need to educate the jury about error rate studies, statistical concepts, etc.		Reject with modification: Added as a Normative Reference the standard that covers minimum educational requirements: <i>ANSI/ASB Standard 105 Minimum Education Requirements for Firearm and Toolmark Examiner Trainees</i>
2	4.1.1	T	Section 4.1.1's requirements for documentation do not go far enough. Specifically that section needs to require that the trainee's file include copies of all assessments and competency tests taken. If examiners are going to claim to be qualified because they completed a training program and successfully passed tests and assessments, then stakeholders have a right to assess the challenge level of said assessments. This means the opportunity to see the questions asked and even images of the samples used for KSS and KDS exercises (and if not images at least lists of the source of each kds and kss mark).	Specifically that section needs to require that the trainee's file include copies of all assessments and competency tests taken. If examiners are going to claim to be qualified because they completed a training program and successfully passed tests and assessments, then stakeholders have a right to assess the challenge level of said assessments. This means the opportunity to see the questions asked and even images of the samples used for KSS and KDS exercises (and if not images at least lists of the source of each kds and kss mark).		Reject with modification: Added as a Normative Reference the standard that covers minimum educational requirements: <i>ANSI/ASB Standard 105 Minimum Education Requirements for Firearm and Toolmark Examiner Trainees</i>
3	4.1.1	Ballot Comment	While I think this document is a vast improvement over existing guidance available to labs on the training of firearms and toolmark examiners a number of deficiencies nevertheless prevent me for supporting it at this time. Among those issues: Section 4.1.1's requirements for documentation do not go far enough. Specifically that section needs to require that the trainee's file include copies of all assessments and competency tests taken. If examiners are going to claim to be qualified because they completed a training program and successfully passed tests and assessments, then stakeholders have a right to assess the challenge level of said assessments. This means the opportunity to see the questions asked and even images of the samples used for KSS and KDS exercises (and if not images at least lists of the source of each kds and kss mark).			Reject: The requirements listed in 4.1.1 already include capture of all required elements. Required elements are listed throughout the document and include items listed in this comment.
4	4.1.5.3	T	Trainers have no attendant educational, proficiency or certification requirements. Trainers require expertise in a range of subject matter areas in order to design and administer a rigorous training program that serves the needs of the firearm and toolmark community.	Describe, with specificity, the expertise that the trainer (or outside experts retained by the trainer) must have. E.g. "The trainer (or outside experts that the trainer retains) must have expertise in topics ranging from experimental design, to human factors, to statistics."		Reject: The document requires the trainer to have subject matter expertise in the topic areas covered during training.
5	4.1.7.4	T	Section 4.1.7.4 admirably ensures that comparison exercises are part of training but it should further specify that they must cover the full range of difficulty the trainee is expected to face in casework.	Should further specify that they must cover the full range of difficulty the trainee is expected to face in casework.		Accept: 4.1.7.4 changed to "A competency test shall be successfully completed in each sub-discipline prior to assuming casework in that specific sub-discipline. Competency testing shall include a range of elements of varying difficulty that would reasonably be expected to be encountered in normal casework and shall include case notes, comparison examinations, and written reports."
6	4.1.7.4	Ballot Comment	Section 4.1.7.4 admirably ensures that comparison exercises are part of training but it should further specify that they must cover the full range of difficulty the trainee is expected to face in casework.			Accept: 4.1.7.4 changed to "A competency test shall be successfully completed in each sub-discipline prior to assuming casework in that specific sub-discipline. Competency testing shall include a range of elements of varying difficulty that would reasonably be expected to be encountered in normal casework and shall include case notes, comparison examinations, and written reports."
7	4.1.10	T	Over a five-year period, examiners shall complete a minimum of 100 hours of discipline-specific continuing education	Over a five-year period, examiners should complete a minimum of 100 hours of discipline-specific continuing education OR Over a five-year period, examiners shall complete a minimum of 100 hours of continuing education	100 hours of discipline specific CE, even if over 5 years, is a lot to demand of labs when taking into consideration budget restrictions, limited personnel, and CE requirements preexisting in current State Licensing requirements, AFTE certification requirements, and ANSI/ASTM	Accept with modification: Added "Discipline-specific continuing education obtained to fulfill other requirements or certifications may be applied to the fulfillment of this document." to the end of the paragraph.
8	4.2.1.6	Ballot Comment	Section 4.2.1.6 should include some training on Brady/Giglio and discovery requirements		STANDARD PRACTICE E2917-19a	Note: This comment references section 4.2.19.2. Accept: 4.2.19.2.g was updated to read "Discovery and exculpatory evidence issues. Note: This topic should include discussions of Brady v Maryland, 373 U.S. 83 (1963) and United States v. Giglio, 405 U.S. 150 (1972)"

9	4.2.4.1	T	Should include in the description of theory and validity a complete understanding not only of the scientific foundations but of the "limitations" of the method as well.	Rewrite as "A complete understanding of the scientific foundation, and limits thereon, of firearm and toolmark examinations (theory, nomenclature, research, statistical methods, limitations on the method including sources of uncertainty, etc.) allows for the successful application of examination techniques and subsequent communication regarding the results of examination."		Accept with modification: Added "limitations." 4.2.4.1 A complete understanding of the scientific foundation of firearm and toolmark examinations (theory, nomenclature, research, statistical methods, limitations, etc.) allows for the successful application of examination techniques and subsequent communication regarding the results of examination.
10	4.2.4.2	T	Section 4.2.4.2 rightly asks that examiner's learn a good deal about validity testing. But one critical area of coverage it neglects is the blinding of tests to counter the Hawthorne effect. It also neglects issues like participant / materials sampling and attrition which have become major focuses of debate.	Add blinding of tests to counter the Hawthorne effect. Also add issues like participant / materials sampling and attrition which have become major focuses of debate.		Accept with modification: Added "(vii) participant and sample selection, viii) the "Hawthorne" effect." Reference to "attrition" was not specifically added as it would be included in the study of repeatability and reproducibility as well as the outcomes of the studies.
11	4.2.4.2	Ballot Comment	Section 4.2.4.2 rightly asks that examiner's learn a good deal about validity testing. But one critical area of coverage it neglects is the blinding of tests to counter the Hawthorne effect. It also neglects issues like participant / materials sampling and attrition which have become major focuses of debate.			Accept with modification: Added "(vii) participant and sample selection, viii) the "Hawthorne" effect." Reference to "attrition" was not specifically added as it would be included in the study of repeatability and reproducibility as well as the outcomes of the studies.
12	4.2.6.2A	T	Evolution of firearms designs	Break down into more specific categories: History of firearms (matchlock, flintlock, etc.) also History of Firearms ID	Other sections are far more specific- Evolution of firearm design is vague	Accept with modification: Added to 4.2.4.2 "a) History of the Firearm & Toolmark Examination discipline." Reworded 4.2.6.2A to read "a) Evolution and history of firearm designs."
13	4.2.7.2	T	Section 4.2.7.2 needs to cover the preservation of evidence and procedures to avoid contaminating and destroying evidence.	Add language covering the preservation of evidence and procedures to avoid contaminating and destroying evidence.		Accept with modification: Reworded 4.2.7.2.d to read "d) Documentation and preservation (when possible) of other discipline evidence".
14	4.2.7.2	Ballot Comment	Section 4.2.7.2 needs to cover the preservation of evidence and procedures to avoid contaminating and destroying evidence.			Accept with modification: Reworded 4.2.7.2.d to read "d) Documentation and preservation (when possible) of other discipline evidence".
15	4.2.16.2	T	Documentation section doesn't specify what forms of documentation are minimally required.	Note forms of documentation that are minimally required or best practice (e.g. photographs)		Reject: The FSSP and other specific standards will designate the requirements for specific forms of documentation.
16	4.2.18.4	T	200 Known Same Source Toolmark comparisons...		Does this mean both bullets and cartridge cases? Is this a combined total?	Reject: The standard states that the number is a combined total of all toolmarks. This includes bullets, cartridge cases, and non-firearm toolmarks.
17	4.2.18.4	T	Section 4.2.18.4 should ensure that KDS samples used also include examples of subclass characteristics.	Add language requiring that KDS samples used also include examples of subclass characteristics.		Accept: Reworded the last sentence to read "Some of the KDST comparisons shall include samples that show the potential effects of subclass characteristics, which could include consecutively manufactured tools/firearms."
18	4.2.18.4	Ballot Comment	Section 4.2.18.4 should ensure that KDS samples used also include examples of subclass characteristics.			Accept: Reworded the last sentence to read "Some of the KDST comparisons shall include samples that show the potential effects of subclass characteristics, which could include consecutively manufactured tools/firearms."
19	4.2.19.2	T	If legal training on discovery is going to be done by the lab, it should include training on Brady/Giglio and be more specific on what discovery requirements	Add "Brady/Giglio" and consult with LTG on legal training		Accept with modification: 4.2.19.1 was modified. The following statement was added: "The development of training topics covering court and other legal issues should include input from local attorneys or other legal experts." 4.2.19.2.g was modified to read "Discovery and exculpatory evidence issues." Note: This topic should include discussions of Brady v Maryland, 373 U.S. 83 (1963) and United States v. Giglio, 405 U.S. 150 (1972)"
20	4.2.19.2	Ballot Comment	I generally join previous comments but specifically believe that section 4.2.19.2 should include training on Brady/Giglio or more generally "exculpatory" evidence. If this section is already including legal principles such as admissibility and discovery, it stands to reason analysts would only benefit if their training included the basics of what may constitute Brady material. Based even on our conversations on the topic, many on the call felt they learned something new. And it is not otherwise expected that analysts would know this very important legal principle, given their role - all the more reason it should be a part of their training.			Accept: 4.2.19.2.g was updated to read "Discovery and exculpatory evidence issues." Note: This topic should include discussions of Brady v Maryland, 373 U.S. 83 (1963) and United States v. Giglio, 405 U.S. 150 (1972)"

21	4.2.19.2	Ballot Comment	I join previous comments. When I broached adding Brady/Giglio to 4.2.19.2 on the last call I was able to join, there seemed to be general support for it. I'm also concerned about the second sentence in 4.2.19.1 and think it should be deleted ("Recommended articles and references for the subject areas in this section can be located in the AFTE Training Manual as well as the AFTE Admissibility Resource Kit located on the AFTE website."). A review of the legal portions of the training manual and the ARK (which, according to the ARK on AFTE's website, is the SWGGUN ARK, not AFTE's ARK) uncovers a LOT of outdated info, lack of critical updates (e.g. recent court opinions, recent amendments to Fed Rule 702), and a lot of purported legal articles that are published in forensic journals (vs. legal journals). The legal readings, which are almost exclusively focused on admissibility, seem to be largely skewed toward providing guidance on successfully opposing Daubert/Frye challenges, which is problematic.			Accept with modification: 4.2.19.1 was updated to remove "Recommended" from the statement "Recommended articles and references for the subject areas in this section can be located in the AFTE Training Manual and in the AFTE Admissibility Resource Kit located on the AFTE website" 4.2.19.2.g was updated to read "Discovery and exculpatory evidence issues. Note: This topic should include discussions of Brady v Maryland, 373 U.S. 83 (1963) and United States v. Giglio, 405 U.S. 150 (1972)."
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Deadline of Submission of Comments: 11-Nov-24
Document Number: ANSI/ASB Std 124
Document Title: Minimum Requirements and Recommendations for a Firearm and Toolmark Examiner Training Program

Comment #	Text Line # (s)	Document Section	Type of Comment	Current Document Wording	Proposed Revision	Revision Justification	Final Resolution
			E-Editorial T-Technical				
1		4.1.7.1	T	"Assessment tools for the various training topics may include, but are not limited to: 125 written tests, oral examinations, mock casework, practical exercises/examinations (comparisons), 126 presentations, and mock trials."	Because they do not say which type of comparison they use, I would suggest the following revision instead. Please add "open set" to the parenthetical "(open set comparisons)"	Closed-set comparisons have lower error rates on average because trainees can use the process of elimination to make matches and complete the examination. Open-set comparisons are more challenging and more closely replicate most case work.	Reject: Error rate estimates of open set vs closed set comparisons refer to black box research studies, not examiner training. Training is inherently required to contain both types of comparison, depending on the stage.
2		4.2.2.2	E/T	iii) extrusion;	Line 229: I am unaware of any barrels made by an extrusion process. The term is relevant but I think it should be elsewhere in the standard, not as a sub-category of barrels. I would recommend it being under 4.2.1.2 – general manufacturing and machining techniques	See recommendation	Accept. Moved to 4.2.1.2.c)
3		4.2.4.1	T	"A complete understanding of the scientific foundation of firearm and toolmark examinations (theory, nomenclature, research, statistical methods, limitations, etc.) allows for the successful application of examination techniques and subsequent communication regarding the results of examination. Recommended articles and references for the subject areas in this section be located in the AFTE Training Manual."	ASB should provide a list of references that offer an alternative perspective on the limitations of firearm and toolmark examinations.	AFTE is invested in the success of and continuation of firearms and toolmark examination as a field. Therefore, the resources they choose demonstrate lower false positive rates due to methodological choices such as closed-set studies (vs. open-set studies) and finely-tuned sample sizes. CIFS is willing to provide a list of resources to supplement the AFTE resources on limitations. Continuing to ignore the published criticism and commentary from scientists outside the field of FATM examiners does a disservice to future examiners and provides evidence of bias in both the training being proposed and in the development process of the standards.	Reject with modification: The AFTE Training Manual includes a variety of references that are relevant to the scientific foundation of Firearm & Toolmark Examination. All available resources would be too numerous to list in this standard. Added to end of introductory paragraph "and other scientific publications that discuss the foundations of Firearm & Toolmark science" and add to 4.2.4.2.g).2.iv) "closed set vs open set validity studies."
4		4.2.4.2	T	"vii.) participant and sample selection"	"vii.) participant and sample selection (including attrition rates)"	We respect that attrition rates should be discussed in sections on repeatability/reproducibility, per the committee's reasoning for rejecting this suggestion by another commenter during previous rounds of revision. However, we would like to point out that attrition rates are significantly high when discussing FATM studies. These studies have attrition rates that can range from the expected 5% to extremes of 35%. Two identical studies with these vastly different attrition rates will produce very different results. This is what qualified examiners need to understand and thus, the learning objective should be specifically called out.	Accept (Bullet point changed to viii. due to a previous addition.)
5		4.2.5.2	E	4) mismatching and interchangeability of ammunition and firearm caliber	Line 334: Suggested rewording: "cartridge interchangeability"		Accept with modification: The standard wording seeks to convey the danger of mismatched ammunition as well as proper interchangeability of ammunition in certain firearms. Changed 4) to "4) mismatching of ammunition and firearm, 5) acceptable interchangeability of ammunition" and added the SAAMI reference Generally Accepted Firearms and Ammunition Interchangeability for point 5).
6		4.2.5.2	E	4) bullet shapes and designs,	Line 340: Suggested rewording: "bullet/projectile shapes and designs" to include other types of projectiles such as shot cartridges, sabot ammunition, etc.	To be more inclusive	Accept
7		4.2.6.2	E	Lines 363-379	This needs rewording, I don't understand the categories/subcategories as displayed. Suggest reformatting it as follows: •Action types •Automatic •Blowback •Bolt •Break-open •Delayed blowback •Double •Falling block •Gas operated •Hinged frame •Hybrid •Lever •Martini •Pump •Recoil •Revolver •Rolling block •Semiautomatic •Single •Trap door •Cycle of fire •Single and double action revolvers •Striker and hammer fired •Bolt-action rifle •Gas operated semiautomatic rifle •Pump action shotgun	See recommendation	Reject with modification: Additional terminology was added based on the content of the comment. <i>Added</i> "3)falling block/rolling block/trap door". <i>Moved down and modified</i> "4) blowback/delayed blowback"; also added "15) new and emergent firearm technologies"
8		4.2.12	T	terminology throughout section (lines 468, 472, 488, 489, 494, 495, 496 cited)	Line 467: Section 4.2.12- throughout this whole section no differentiation is made between shotshells (unfired) and shotshell cases (fired). Needs to be updated throughout the section to either reference shotshell/shotshell cases or unfired/fired shotshells.	See recommendation	Accept with modification: Added "[fired/unfired]" after "Shotshell" in the section title (4.2.12), and in sections 4.2.12.2.a), 4.2.12.2.i), 4.2.12.2.j). Also added "cycled and/or" before fired in 4.2.12.1.
9		4.2.12	E	h) Evaluation and comparison of cycled cartridges and test fired cartridge cases/shotshells.	Line 494: Suggested rewording: "Evaluation and comparison of cycled cartridges/shotshells and test fired cartridge cases/shotshell cases."		Reject: Unfired shotshells are also referred to as "Cartridges," so the first part of the sentence "Cycled cartridges" includes both rifled firearm and shotgun ammunition. The second part includes "test fired" so that confirms it refers to fired cases both from rifled firearm and shotgun ammunition.
10		4.2.19.1	T	"The development of training topics covering court and other legal issues should include input from local attorneys or other legal experts."	"The development of training topics covering court and other legal issues shall be developed in collaboration with representatives of local defense and prosecution offices. Sources for collaboration and joint presentations include the institutional prosecuting authority, the institutional public defender office, the judiciary, and local law schools. Both the defense and prosecution perspective shall be represented."	This language ensures that both the defense and prosecution are involved in the production of training materials.	Reject: Current verbiage is inclusive of input from any side of the legal question and allows the FSSP to use resources available to them without being burdensome.

11		4.2.19.1	T	"Articles and references for the subject areas in this section can be located in the AFTE Training Manual and in the AFTE Admissibility Resource Kit located on the AFTE website."	A syllabus should be maintained and voted on by the Standards Board.	Because the AFTE Manual does not contain many unbiased sources, CIFS is willing to assist in the development of a syllabus composed of a balance of AFTE documentation, law reviews, and scientific, peer-reviewed literature. We ask that you help to move the field of FATM examination forward by incorporating peer-reviewed science and opposing opinions into the classroom, which will strengthen future examiners' fitness for the courtroom.	Reject with modification: The AFTE Training Manual includes a variety of references that are relevant to communication, legal issues and court testimony in Firearm & Toolmark Examination. The intention was not to exclude other resources that would be too numerous to list. Add "and other scientific publications that discuss legal issues in Firearm & Toolmark science." The Standards Board does not create or maintain training syllabi. It is the responsibility of the FSP to generate training syllabi and materials that meet the standards.
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Deadline of Submission of Comments: 10-Mar-25
Document Number: ANS/ASB Std 124
Document Title: Minimum Requirements and Recommendations for a Firearm and Toolmark Examiner Training Program

Comm ent #	Text Line # (s)	Document Section	Type of Comment E-Editorial T-Technical	Current Document Wording	Proposed Revision	Revision Justification	For Working Group use only, not to be completed by commenter.	
							Working Group Resolution	Final Resolution
2		4.2.4.1	T	A complete understanding of the scientific foundation of firearm and toolmark examinations (theory, nomenclature, research, statistical methods, limitations, etc.) allows for the successful application of examination techniques and subsequent communication regarding the results of examination. Recommended articles and references for the subject areas in this section can be located in the AFTE Training Manual. and other scientific publications that discuss the foundations of Firearm & Toolmark science.	A complete understanding of the scientific foundation of firearm and toolmark examinations (theory, nomenclature, research, statistical methods, limitations, etc.) allows for the successful application of examination techniques and subsequent communication regarding the results of examination. Recommended articles and references for the subject areas in this section can be located in the AFTE Training Manual and <u>in other reliable, appropriately peer-reviewed and contemporary publications</u> that discuss the foundations, <u>examination, and communication</u> of Firearm & Toolmark science.	Modification suggested to improve sentence construction, and reflect that the paragraph addresses understanding of foundations, examination and communication of firearm and tool-mark evidence. Therefore, it is appropriate that the recommended reading reflects this scope. Further, the modification underscores the relevance of both scientific publications and publications from other disciplines (e.g., law) to the topics, and reflects that the training programme should rely on reputable and up-to-date sources.	Accept with modification: This section does not specifically cover examination or communication of findings. Last sentence changed to "Articles and references for the subject areas in this section can be located in the AFTE Training Manual, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and in other contemporary peer-reviewed publications that discuss the foundations of Firearm & Toolmark science."	Accept with modification: This section does not specifically cover examination or communication of findings. Last sentence changed to "Articles and references for the subject areas in this section can be located in the AFTE Training Manual, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and in other contemporary peer-reviewed publications that discuss the foundations of Firearm & Toolmark science."
1		4.2.19.1	T	These topics address the intersection of science and the law, and the necessity of effective communication with various stakeholders in the legal system. The development of training topics covering court and other legal issues should include input from local attorneys or other legal experts. Articles and references for the subject areas in this section can be located in the AFTE Training Manual and, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and other scientific publications that discuss legal issues in Firearm & Toolmark science.	These topics address the intersection of science and the law, and the necessity of effective communication with various stakeholders in the legal system. The development of training topics covering court and other legal issues should include input from local attorneys or other legal experts. Articles and references for the subject areas in this section can be located in the AFTE Training Manual and, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and <u>in other scientific-reliable, appropriately peer-reviewed and contemporary</u> publications that discuss legal issues <u>in the context of</u> Firearm & Toolmark science.	Modification suggested to improve sentence construction, underscore the relevance of both scientific publications and publications from other disciplines (e.g., law) to the topic, and reflects that the training programme should rely on reputable and up-to-date sources. It is noted that the AFTE Training Manual Section O (RESEARCH PROJECT, REPORT WRITING, EXPERT TESTIMONY, AND EXTERNAL LABORATORY REVIEW AND TOURS) includes useful references but all those sources relating to the intersection of science and law are over 10 years old. There has been considerable literature produced examining this intersection, including in the context of firearm and tool-mark evidence, since that date.	Accept with modification: Last sentence changed to "Articles and references for the subject areas in this section can be located in the AFTE Training Manual, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and in other contemporary peer-reviewed publications that discuss legal issues and communication in the context of Firearm & Toolmark science."	Accept with modification: Last sentence changed to "Articles and references for the subject areas in this section can be located in the AFTE Training Manual, in the AFTE Admissibility Resource Kit (SWGUN ARK) located on the AFTE website, and in other contemporary peer-reviewed publications that discuss legal issues and communication in the context of Firearm & Toolmark science."
3			Ballot Comment	This subject matter is outside my area of expertise, so I am not comfortable voting for or against this standard.			Noted.	Noted.