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NUCLEAR ENTERPRISE

Clearer Guidance
Could Improve Joint
Professional Military
Education Nuclear
Deterrence
Curriculum

Clearer Guidance Could Improve Joint Professional Military Education Nuclear Deterrence Curriculum

GAO-25-107416

September 2025

A report to congressional committees.

For more information, contact: Joseph W. Kirschbaum at Kirschbaumj@gao.gov.

What GAO Found

All 23 Joint Professional Military Education (JPME) programs GAO surveyed reported that they include varying degrees of nuclear deterrence content in their intermediate- and senior-level curricula, including incorporating mandatory topics identified in JPME guidance. However, the Department of Defense (DOD) has not explicitly defined nuclear deterrence in the guidance to help JPME programs develop nuclear deterrence content. Including an explicit definition of nuclear deterrence in the guidance could help JPME program officials facilitate a shared understanding of the concept, which would better prepare JPME students for joint assignments related to nuclear deterrence missions.

Selected Defense Schools' Core Courses at the Intermediate- and Senior-Levels with Nuclear Deterrence Content

College or university	Number of core courses	Number of core courses with nuclear deterrence content
National Defense University	37	12
National Defense University - Joint Forces Staff College	10	7
National Intelligence University	5	1
Army Command and General Staff College	17	5
Army War College	29	6
Naval War College	10	4
Air University	30	19
Marine Corps University	28	9
Space Force - Johns Hopkins University School of Advanced International Studies	13	8

GAO analysis of DOD information provided in response to GAO survey. | GAO-25-107416

In response to DOD requirements, JPME programs have begun developing learning outcomes and objectives for their JPME curricula that include a focus on nuclear topics, such as nuclear deterrence. However, GAO found the time frame for the JPME programs to implement DOD's outcomes-based military education system is unclear, and the military services had varying understandings of the required time frame for implementation ranging from 2027 to 2029. Setting a specific time frame for full implementation of its outcomes-based military education system could help DOD implement the effort and meet the educational needs of the joint force for contemporary nuclear deterrence.

Why GAO Did This Study

The 2022 Nuclear Posture Review emphasizes the importance of supporting the professional development of service members working in and supporting the nuclear field. Additionally, DOD has recently shifted from a topics-based approach to an outcomes-based approach to monitor and assess student learning for key topics covered in JPME curricula, including nuclear deterrence.

A Senate Armed Services Committee report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2024 included a provision for GAO to assess DOD's JPME system, including the curriculum involving nuclear deterrence. GAO evaluated, among other things, the extent that JPME programs have 1) included nuclear deterrence content in JPME, and 2) developed learning outcomes that include nuclear deterrence.

For this report, GAO reviewed JPME programs' curricula and conducted a web-based survey of the education institutions that manage the 23 intermediate- and senior-level JPME programs. GAO also reviewed policy, guidance, and other documents, and interviewed cognizant officials.

What GAO Recommends

GAO is making three recommendations to DOD, including update guidance to explicitly define nuclear deterrence and thereby enhance JPME curricula, and set a specific time frame for full implementation of outcomes-based military education. DOD partially concurred with the three recommendations. GAO continues to believe that these recommendations are warranted, as stated in the report.

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Abbreviations

DOD	Department of Defense
JPME	Joint Professional Military Education
ODNI	Office of the Director of National Intelligence
PME	Professional Military Education

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September 18, 2025

Congressional Committees

To address the Department of Defense's (DOD) top defense priorities—nuclear deterrence and strategic deterrence—professional military education (PME) institutions have been refocusing their curricula to deepen the expertise of the DOD workforce about the nation's competitors and the future of war.¹ The 2022 *Nuclear Posture Review* states that the U.S. will bolster regional nuclear deterrence through enhanced coordination with allies and partners by better synchronizing conventional and nuclear forces, including improving conventional forces' ability to operate in the face of a limited nuclear attack.² Also, the *Nuclear Posture Review* states that the capability to deter nuclear attacks is critical since some peer and near-peer competitors have developed strategies for warfare that may rely on the threat or use of nuclear weapons to terminate a conflict on advantageous terms. The *Nuclear Posture Review* highlights the importance of preparing the next generation of deterrence and arms control leaders and supporting the professional development of service members and civilians working in and supporting the nuclear field.

In 2020, the Chairman of the Joint Chiefs of Staff introduced a vision for PME and joint professional military education (JPME)—a subset of PME—to prepare officers from all five military services to operate as a joint force, such as at a combatant command.³ Subsequent guidance reoriented JPME curricula from a topics-based to an outcomes-based approach for developing practical warfighting skills and helping students

¹In 2022, three DOD policy documents—the 2022 *National Security Strategy*, the 2022 *National Defense Strategy*, and the 2022 *Nuclear Posture Review*—identify these top two priorities. The White House, *National Security Strategy* (October 2022); Department of Defense (DOD), *National Defense Strategy* (October 27, 2022); DOD, *Nuclear Posture Review* (October 27, 2022).

²The *Nuclear Posture Review* describes United States nuclear strategy, policy, posture, and forces in support of the *National Security Strategy* and *National Defense Strategy*. It reaffirms a continuing commitment to a safe, secure, and effective nuclear deterrent and strong and credible extended deterrence.

³Chairman of the Joint Chiefs of Staff (CJCS), *Developing Today's Joint Officers for Tomorrow's Ways of War: Vision and Guidance for Professional Military Education and Talent Management* (May 1, 2020).

address contemporary challenges.⁴ Further, a 2020 instruction from the Chairman of the Joint Chiefs of Staff directed JPME programs to implement an outcomes-based education system with program learning outcomes that describe what graduates are to know and do.⁵

Given the importance of nuclear deterrence to national security, DOD has taken steps to build nuclear deterrence experience and expertise among joint military officers. According to the Chairman of the Joint Chiefs of Staff, DOD's institutional understanding of deterrence has declined since the end of the Cold War, which requires greater JPME emphasis on deterrence in today's environment.⁶

A Senate Armed Services Committee report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2024 includes a provision for us to assess DOD's JPME system to include a review of curricula involving nuclear deterrence.⁷ This report assesses the extent to which: (1) DOD and the military services have included nuclear deterrence content in guidance that informs JPME curricula; (2) JPME programs have included nuclear deterrence content in JPME curricula; and (3) JPME programs have begun developing learning outcomes that include nuclear deterrence.

For objective one, we reviewed documentation and interviewed cognizant DOD and Office of the Director of National Intelligence (ODNI) officials to determine how nuclear deterrence content has been included in JPME guidance provided by the Chairman of the Joint Chiefs of Staff and military services, such as through instructions and manuals. We compared the documentation to national policy and strategy on nuclear deterrence to describe how JPME guidance includes nuclear deterrence

⁴CJCS Manual 1810.01, *Outcomes-Based Military Education Procedures for Officer Professional Military Education* (April 1, 2022); DOD Instruction 1322.35, vol. 1, *Military Education: Program Management and Administration* (April 26, 2022).

⁵CJCS Instruction (CJCSI) 1800.01F, *Officer Professional Military Education Policy* (May 15, 2020) (superseded by CJCSI 1800.01G, *Officer Professional Military Education Policy* (April 15, 2024)). Learning outcomes are hierarchical, with institutional learning outcomes branching to program learning outcomes and program learning outcomes branching into subordinate learning outcomes. Learning objectives are precise statements of a student's expected performance, the learning environment, and the required specificity for student performance. CJSM 1810.01.

⁶CJCS Memorandum CM-0375-22 *Special Areas of Emphasis for Joint Professional Military Education in Academic Years 2024 and 2025* (December 4, 2022).

⁷S. Rep. No. 118-58, at 293 (2023).

content drawn from national-level policy and strategy, including how it should be incorporated into JPME curricula.

For objective two, we conducted a web-based survey of colleges and universities that manage the 23 intermediate- and senior-level JPME programs included in our report and interviewed cognizant DOD and ODNI officials to determine the extent to which nuclear deterrence content was included in military education curricula.⁸ The scope of our survey included intermediate- and senior-level JPME programs that are attended by joint officers. For further information on our survey, see appendix I. We also compared how JPME programs have developed nuclear deterrence content to address guidance from the Chairman of the Joint Chiefs of Staff.

For objective three, we reviewed documentation, interviewed cognizant DOD and ODNI officials, and used the responses to our web-based survey to determine the extent to which JPME programs have developed learning outcomes that include nuclear deterrence in intermediate- and senior-level JPME curricula. We also compared JPME programs' implementation of the outcomes-based education system—including nuclear deterrence learning outcomes and time frames—with guidance from the Chairman of the Joint Chiefs of Staff and selected principles from the *Standards for Internal Control in the Federal Government* to assess implementation of the outcomes-based system.⁹ Our scope and methodology are described in greater detail in appendix II.

We conducted this performance audit from February 2024 to September 2025 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe

⁸We coordinated with the colleges and universities that manage JPME programs to ensure our survey covered all intermediate- and senior-level JPME programs. To identify the programs each college and university managed at the time our survey was administered, we first developed a list of JPME programs from CJCSI 1800.01G. We then asked officials at each college and university to review the list of their school's programs and provide any corrections if necessary. After incorporating the corrections we received, we identified 23 intermediate- and senior-level JPME programs for the purposes of our survey design and data collection.

⁹CJCS Manual 1810.01; CJCSI 1800.01G; GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

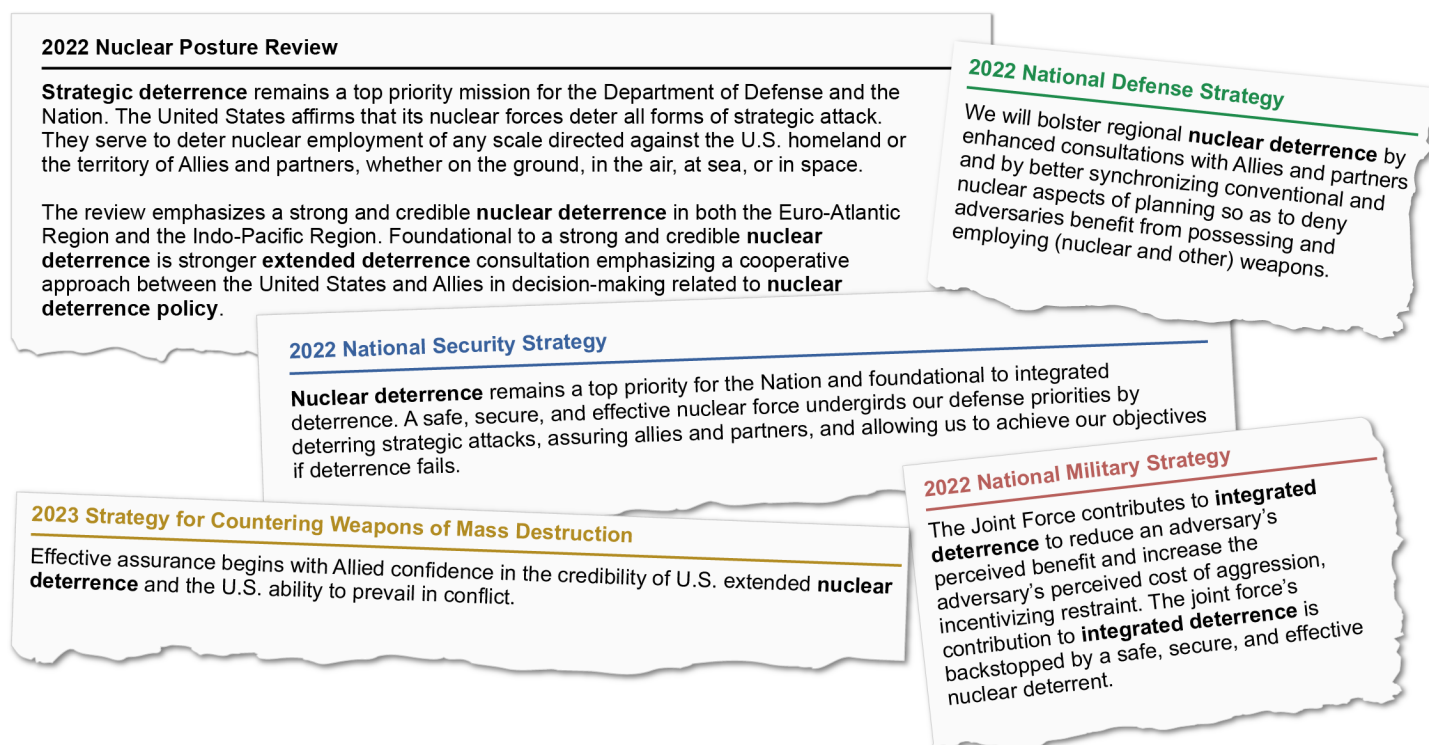
that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

DOD's Policy for Nuclear Deterrence

DOD policy describes deterrence activities regarding the use of nuclear weapons as those conducted in an effort to prevent weapons of mass destruction, proliferation, or their use by presenting a credible U.S. and partner nation's response through specific counteractions that would deny the effects an enemy intends to create by using such weapons.¹⁰ The *2022 National Security Strategy*, *National Defense Strategy*, and *Nuclear Posture Review* describe DOD's priorities, including nuclear deterrence. Figure 1 shows nuclear deterrence-related concepts featured in these national-level U.S. policies.

Figure 1: Deterrence Concepts Addressed in National- and Department of Defense-Level Policy



Source: GAO analysis of The White House, Department of Defense, and Chairman of the Joint Chiefs of Staff documentation | GAO-25-107416

¹⁰CJCS, Joint Publication (Joint Pub.) 3-40, *Joint Countering Weapons of Mass Destruction* (November 27, 2019) (validated July 14, 2021).

Overview of Professional Military Education for Officers

The *Goldwater-Nichols Department of Defense Reorganization Act of 1986* (Goldwater-Nichols Act), as amended, established requirements for improving joint officer management policies, including that joint officers successfully complete an appropriate program at a JPME school.¹¹ The Secretary of Defense—with the advice and assistance of the Chairman of the Joint Chiefs of Staff—requires each JPME school to periodically review and revise its intermediate- and senior-level JPME curriculum to strengthen the focus on joint matters and to prepare officers for joint-duty assignments.¹²

JPME is provided in three phases overseen by the Chairman of the Joint Chiefs of Staff.¹³ Within this continuum, phase one of JPME is provided as part of intermediate-level education, and phase two of JPME is provided as part of senior-level education.¹⁴ As figure 2 illustrates, intermediate- and senior-level JPME programs are designed for officers at pay grades O-4 through O-6. Additionally, as shown in figure 2, there are numerous intermediate- and senior-level education schools that provide JPME.¹⁵

¹¹Pub. L. No. 99-433, §§ 401(a) and 404 (1986), *as amended*, codified at 10 U.S.C. §§ 619a and 661. The Goldwater-Nichols Act designated officers completing the required JPME as “Joint Qualified Officers” and as those officers who are particularly trained in, and oriented toward, joint matters. For the purposes of this report, we refer to such officers as joint officers.

¹²Joint matters are those related to the development or achievement of strategic objectives through the synchronization, coordination, and organization of integrated forces in operations conducted across domains, such as land, sea, air, space, or the information environment. These include matters relating to national military strategy, strategic planning and contingency planning, command and control of operations under unified command, national security planning, or combined operations with military forces of allied nations.

¹³JPME is defined as consisting of the rigorous and thorough instruction and examination of officers of the armed forces in an environment designed to promote a theoretical and practical in-depth understanding of joint matters and, specifically, of the subject matter covered. 10 U.S.C. § 2151(a).

¹⁴Phase three of JPME is provided as part of the CAPSTONE program at the National Defense University for newly selected O-7s. An O-7 pay grade in the Army, Air Force, Marine Corps, and Space Force is a brigadier general; in the Navy, an O-7 is a rear admiral.

¹⁵In addition to the military service education institutions depicted in figure 2, the National Defense University and National Intelligence University are federal degree-granting institutions authorized by statute to offer JPME credit upon graduation. The National Defense University is organized under the DOD, and the National Intelligence University is organized under the ODNI.

Figure 2: Joint Professional Military Education Continuum, Including Intermediate- and Senior-Level Officers

Intermediate-level education (Phase 1)	Senior-level education (Phase 2)
<p>Who attends:</p> <ul style="list-style-type: none">• Intermediate-level officers in pay grade O-4 <p>Joint Professional Military Education (JPME) Phase I focus:</p> <ul style="list-style-type: none">• Focuses on the national military capabilities; command structure; joint doctrine and concepts; introduction to joint warfighting; and joint planning and execution, among other things. <p>Intermediate-level colleges that provide JPME:</p> <ul style="list-style-type: none">• Army War College, Army Command and General Staff College, Space Force Schriever Scholars (affiliated with Johns Hopkins University School of Advanced International Studies), National Intelligence University, College of Naval Command and Staff, Marine Corps Command and Staff College, and Air Command and Staff College.	<p>Who attends:</p> <ul style="list-style-type: none">• Senior level officers in pay grades O-5 and O-6 <p>JPME Phase II focus:</p> <ul style="list-style-type: none">• Focuses on the National Defense Strategy, the National Security Strategy, and the National Military Strategy; joint warfighting concepts; theater strategy; campaigning; national-level decision-making; joint all-domain operations; and introduction to strategic leadership, among other things. <p>Senior-level colleges that provide JPME:</p> <ul style="list-style-type: none">• Army War College, Army Command and General Staff College, College of Naval Warfare, Marine Corps War College, Air War College, Space Force West Space Scholars (affiliated with Johns Hopkins University School of Advanced International Studies), and the following programs managed by the National Defense University: National War College, Joint Forces Staff College, Dwight D. Eisenhower School for National Security and Resource Strategy, College of International Security Affairs, and College of Information and Cyberspace.

Source: GAO analysis of Department of Defense information. | GAO-25-107416

Note: An O-4 pay grade in the Army, Air Force, Marine Corps, and Space Force is a major; in the Navy, an O-4 is a lieutenant commander. An O-5 pay grade in the Army, Air Force, Marine Corps, and Space Force is a lieutenant colonel; in the Navy, an O-5 is a commander. An O-6 pay grade in the Army, Air Force, Marine Corps, and Space Force is a colonel; in the Navy, an O-6 is a captain.

Overview of the Outcomes-Based Military Education System

The Joint Staff issued a *Vision and Guidance for Talent Management* (referred to in this report as the Joint Staff Vision or *Vision*) for PME and JPME that directed the military education enterprise to shift its curricula from a predominately topics-based model to an outcomes-based approach to evolve the JPME framework toward the JPME requirements of the 21st century.¹⁶ This *Vision* calls for JPME programs to provide practical preparation for their graduates by incorporating experiential learning (e.g., wargames and exercises) to develop the practical and critical thinking skills joint officers can apply to contemporary challenges, including deterrence and measures short of armed conflict.

According to guidance from the Chairman of the Joint Chiefs of Staff for outcomes-based education, JPME curricula is developed from statute,

¹⁶CJCS, *Developing Today's Joint Officers for Tomorrow's Ways of War: Vision and Guidance for Professional Military Education and Talent Management* (May 1, 2020).

policy, and Chairman of the Joint Chiefs of Staff guidance.¹⁷ JPME officials from one program told us that while individual JPME programs now design their own unique outcomes, their JPME curricula must still address mandatory topics and inputs as directed by statute and by policy from the Chairman of the Joint Chiefs of Staff.

JPME Oversight Roles and Responsibilities

In 2022, DOD issued an instruction that established military education policy, assigned responsibilities, and provided procedures for organizing, managing, and implementing PME programs.¹⁸ In 2024, the Chairman of the Joint Chiefs of Staff issued an update to its *Officer Professional Military Education Policy* that outlines additional roles and responsibilities with a focus on JPME and outcomes-based military education.¹⁹

The Office of the Secretary of Defense, Chairman of the Joint Chiefs of Staff, and the military services are responsible for overseeing and managing the services' and ODNI's JPME programs.

- **Assistant Secretary of Defense for Readiness.** This office is responsible for overseeing implementation of military education policy and coordinating with the Chairman of the Joint Chiefs of Staff related to joint force outcomes-based military education. Additionally, this office provides guidance on military education requirements to the DOD component heads.
- **Deputy Assistant Secretary of Defense for Force Education and Training.** This office is responsible for monitoring military education quality to ensure DOD personnel and their leaders are afforded effective learning opportunities that meet current, emerging, and future requirements. Additionally, this office is responsible for formulating recommendations and guiding the development of DOD military education policy on oversight issues, including reviewing,

¹⁷CJCS Manual 1810.01.

¹⁸DODI 1322.35, vol. 1, *Military Education: Program Management and Administration* (April 26, 2022). Military education encompasses all PME, including JPME, professional continuing education, professional development opportunities, doctrinal studies, and graduate-level educational opportunities at federal or civilian institutions.

¹⁹CJCSI 1800.01G, *Officer Professional Military Education Policy* (April 15, 2024) (superseding CJCSI 1800.01F, *Officer Professional Military Education Policy* (May 15, 2020) (superseding CJCSI 1800.01G, *Officer Professional Military Education Policy* (April 15, 2024))). The Chairman of the Joint Chiefs of Staff issued the first version of the Officer Professional Military Education Policy in 1996, replacing a 1993 manual on military education policy.

evaluating, and assessing service and joint education policies, programs, and resources.

- **Secretaries of the military departments.** These offices are responsible for monitoring and periodically evaluating the program-outcome review processes to ensure that military education programs remain effective and current with evolving strategies and technologies as identified by the Office of the Secretary of Defense, Chairman of the Joint Chiefs of Staff, and military department priorities.
- **Chairman of the Joint Chiefs of Staff.** The Chairman of the Joint Chiefs of Staff is responsible for formulating policies for JPME of service members and is the principal military advisor to the Secretary of Defense on PME matters. Additionally, the Chairman of the Joint Chiefs of Staff is responsible for overseeing JPME, including designation of JPME programs and accreditation. Further, the Chairman of the Joint Chiefs of Staff is responsible for biannual reviews and revisions to JPME curriculum guidance to ensure that the priorities of the Secretary of Defense and joint staff are integrated into military education curricula.
- **Combatant Commanders.** Combatant commanders are responsible for employing the processes, education, training, and experience to evaluate military education outcomes to support DOD strategic plans. Additionally, combatant commanders participate in periodic assessments led by the Chairman of the Joint Chiefs of Staff of JPME graduates. Further, combatant commanders respond to requests relative to the currency and relevancy of JPME and PME curricula.
- **Joint Service School Leadership:** The 2022 manual titled *Outcomes-Based Military Education Procedures for Officer Professional Military Education* assigns responsibilities to Joint and Service College and University presidents, vice presidents, deans, and provosts of JPME institutions—the joint and service school leadership. Also, the manual includes the responsibility for outcomes-based military education program certification.²⁰

²⁰CJCS Manual 1810.01.

DOD Includes Nuclear Deterrence Content in Its Guidance for JPME Curricula

DOD Organizations Provide Guidance with Nuclear Deterrence Content for Developing JPME Curricula

DOD and the military services generally include nuclear deterrence content in guidance used to develop intermediate- and senior-level JPME curricula. This aligns with policy issued in 2020 by the Chairman of the Joint Chiefs of Staff, who assigns responsibilities and establishes six joint learning areas highlighting knowledge that JPME programs will use to build joint knowledge.²¹

This policy also requires, among other requirements, implementation of the outcomes-based education system, provides guidance on delivery modes, and establishes joint officer education objectives that include nuclear content.

Nuclear deterrence policies and concepts in JPME evolved after the end of the Cold War, according to DOD documentation and several military service officials.²² Recognizing that deterrence had become more complex, in 2019 the Chairman of the Joint Chiefs of Staff directed that strategic deterrence be incorporated into JPME curricula for academic years 2020 and 2021 as a special area of emphasis.²³ The memorandum

²¹CJCSI 1800.01F. The six areas are: (1) strategic thinking and communication; (2) the profession of arms; (3) the continuum of competition, conflict, and war; (4) the security environment; (5) strategy and joint planning; and (6) globally integrated operations.

²²U.S. Strategic Command issued a memorandum to the Chairman of the Joint Chiefs of Staff emphasizing nuclear content and contemporary deterrence education requirements in joint and service-level PME to move beyond a Cold War focus of deterrence. U.S. Strategic Command (USSTRATCOM) Memorandum SM-1015-21, *Memorandum for the Director, Joint Force Development, JCS/J7* (February 17, 2021) (CUI//REL USA, FVEY). This memorandum stressed the need to deter adversary aggression and coercion and requested increased throughput and resourcing for JPME curricula.

²³CJCS Memorandum CM-0108-19, *Special Areas of Emphasis for Joint Professional Military Education in Academic Years 2020 and 2021* (May 6, 2019). Special areas of emphasis are approved by the Chairman of the Joint Chiefs of Staff to ensure that JPME programs remain current and relevant. Special areas of emphasis are mandatory for JPME programs. These special areas of emphasis are temporary and permit organizations across DOD to recommend novel student learning outcomes. The Joint Staff reviews special areas of interest and provides recommendations for curriculum updates to the Military Education Coordination Council.

directs the chiefs of the military services and president of the National Defense University to provide students conceptual and practical grounding in the basic principles of deterrence and escalation as they have evolved during the Cold War and post-Cold War eras. Also, the memorandum directs deterrence in U.S. national and defense strategy, extended nuclear deterrence and assurance of allies, and challenges including the legitimacy of nuclear deterrence.

Since 2020, JPME programs also have been required to incorporate national security policy related to nuclear deterrence and to include high-level nuclear-related topics, such as nuclear capabilities and nuclear concepts, into JPME curricula as an enduring special area of emphasis.²⁴ The 2020 and 2024 *Officer Professional Military Education Policy* directs the service chiefs and presidents of the National Defense University and National Intelligence University to incorporate high-level DOD policy guidance into JPME programs, including the *Nuclear Posture Review*. Inclusion of such policy guidance provides graduates with knowledge, skills, and abilities required to perform successfully across an armed conflict continuum.²⁵ The 2024 *Officer Professional Military Education Policy* directed the incorporation of the *Nuclear Posture Review* into JPME programs in order to improve the common understanding of the implications of weapons of mass destruction, including nuclear capabilities and concepts, and prevailing in a nuclear environment.

In 2022, the Chairman of the Joint Chiefs of Staff carried over from the previous special areas of emphasis list and refined the topic of strategic deterrence to include multidomain efforts and directed that strategic deterrence be incorporated into JPME curricula for academic years 2024 and 2025.²⁶ Specifically, the Chairman's memo, *Special Areas of Emphasis for Joint Professional Military Education in Academic Years 2024 and 2025*, directs the chiefs of the military services and president of the National Defense University to include learning outcomes that enable

²⁴JPME programs incorporate two categories of special areas of emphasis into the curriculum—enduring and periodic. Enduring special areas of emphasis are based on Secretary of Defense direction for JPME, and they reflect national security interests expected to remain in policy in accordance with Secretary of Defense guidance. Periodic special areas of emphasis are based on stakeholder nominations of JPME topics to expand or maintain currency and relevancy of JPME curricula.

²⁵CJCSI 1800.01F (May 15, 2020) and CJCSI 1800.01G (April 15, 2024).

²⁶CJCS Memorandum CM-0375-22. According to Joint Staff officials, Strategic Deterrence in the 21st Century is a periodic special area of emphasis.

intermediate- and senior-level JPME students to comprehend the difference between strategic deterrence and nuclear deterrence.

**Military Departments
Provide Guidance
Emphasizing Nuclear
Deterrence**

The military services also provided guidance to emphasize nuclear deterrence-related content. In 2022, the Army, Marine Corps, Navy, Air Force, and Space Force provided joint guidance on operations in a nuclear environment.²⁷ Also, the military departments provide other service-specific requirements for JPME programs, as shown in table 1.

²⁷Department of the Army, United States Marine Corps, Department of the Navy, Headquarters, Department of the Air Force, *Operations in a Nuclear Environment* (March 7, 2022). This manual provides guidance for commanders and staff of all the military services when planning and conducting operations in a nuclear environment. However, it is not directive or prescriptive in nature. It contains, among other things, information on nuclear operations including U.S. deterrence of nuclear attack and nonnuclear strategic attack. It also notes the importance for the services to demonstrate their ability to operate in a nuclear environment across developmental domains, including education.

Table 1: Military Departments That Provide Requirements for Joint Professional Military Education (JPME) Programs, Including to Address Nuclear Deterrence

Military service(s)	Document	Purpose
Army	Department of the Army, <i>Army Strategy for Integrating Nuclear Implications into Conventional Operations</i> (2022)	<ul style="list-style-type: none">Provides a framework for use against a nuclear-armed adversary to deny the threat or use of a nuclear weapon on the battlefield.Includes an objective to update education curricula related to the nuclear weapons threat, employment implications, and mitigation strategies.
Air Force / Space Force	Department of the Air Force Instruction (DAFI) 13-504, <i>Nuclear Mission Professional Development</i> (November 23, 2021)	<ul style="list-style-type: none">Establishes nuclear education requirements across the continuum of learning and introduces nuclear occupational competencies.Outlines roles and responsibilities on nuclear deterrence operations to include developing and sustaining realistic nuclear learning for officers, including developing relevant learning objectives for nuclear curricula that supports deterrence thought and national strategies.
Navy / Marine Corps	Department of the Navy, <i>Naval Education Strategy</i> (2023)	<ul style="list-style-type: none">Describes high-level strategy to ensure professional military education (PME) programs are robust, requirements-based, relevant, and fully supported.States the Navy will clearly define PME and JPME milestones at the community, military service, and inter-service levels to articulate education requirements for developing naval warfighting leaders, senior staff officers, and strategists.

Source: GAO analysis of Department of Defense (DOD) information. | GAO-25-107416

JPME Programs Include Nuclear Deterrence Content in Curricula, but Key Terms Are Not Defined

All 23 JPME programs that we surveyed reported including some nuclear deterrence content in their intermediate- and senior-level curricula, including incorporating mandatory topics identified in JPME guidance. JPME instructors generally follow Joint Staff policy for teaching students about mandatory topics related to nuclear deterrence. However, DOD has not explicitly defined nuclear deterrence in the guidance for the development of nuclear deterrence curricular content.

All JPME Programs Include Nuclear Deterrence Content in Required Curricula

We administered a web-based survey to the nine colleges and universities that manage DOD’s intermediate- and senior-level JPME programs (see table 2) and asked survey respondents to provide information on all courses offered that include content related to nuclear deterrence.²⁸ All 23 JPME programs that we surveyed reported including

²⁸Survey respondents were asked “Does this program include content related to nuclear deterrence at all?” The full list of questions used in the survey is in appendix I.

some content about nuclear deterrence in their core (i.e., required) curricula.²⁹

Table 2: Department of Defense, Office of the Director of National Intelligence, and Military Service Intermediate- and Senior-Level Joint Professional Military Education Programs Included in GAO Survey

College or university	Joint Professional Military Education (JPME) program	JPME phase
National Defense University	College of Information and Cyberspace	Senior
	College of International Security Affairs	Senior
	Dwight D. Eisenhower School for National Security and Resource Strategy (Eisenhower School)	Senior
	National War College	Senior
Joint Forces Staff College ^a	Joint Advanced Warfighting School	Senior
	Joint and Combined Warfighting School ^b	Senior
National Intelligence University	National Intelligence University - JPME Cohort	Intermediate
Army War College	Army War College Distance Education Senior Service College	Intermediate
	Army War College Joint Studies Program	Senior
	Army War College Resident Senior Service College Program	Senior
Army Command and General Staff College	Advanced Strategic Leadership Studies Program	Senior
	Command and General Staff Officers Course	Intermediate
Naval War College	College of Naval Command and Staff	Intermediate
	College of Naval Warfare	Senior
Air University	Air Command and Staff College Distance Learning	Intermediate
	Air Command and Staff College Distance Learning (Online Master's)	Intermediate
	Air Command and Staff College Resident	Intermediate
	Air War College - Resident	Senior
Marine Corps University	Marine Corps Command and Staff College - Resident	Intermediate
	Marine Corps Command and Staff College Distance Education Program - Non-resident	Intermediate
	Marine Corps War College	Senior
Johns Hopkins University School of Advanced International Studies	Space Force Schriever Space Scholars	Intermediate
	Space Force West Space Scholars	Senior

Source: GAO analysis of Department of Defense data. | GAO-25-107416

Note: Taken together, the programs listed above include all intermediate- and senior-level JPME courses available to students. Our categorization of programs does not correspond to how the Department of Defense (DOD) categorizes the programs in guidance for outcomes-based military education due to differences in how we accounted for online and distance education versions of some programs.

²⁹The 23 JPME programs we identified—for the purpose of administering and analyzing the results of our survey— cover the full universe of intermediate- and senior-level JPME. However, our categorization of programs does not correspond to how DOD categorizes the programs due to differences in how we accounted for online and distance education versions of some programs.

^aThe Joint Forces Staff College, which comprises the Joint and Combined Warfighting School (JCWS) and the Joint Advanced Warfighting School (JAWS), is part of National Defense University. To facilitate our analyses of curricula data and to ease the administrative burden for National Defense University officials, we administered a survey to both National Defense University and the Joint Forces Staff College.

^bAccording to a Joint Staff official, DOD considers the Joint and Combined Warfighting College to be an “advanced intermediate” JPME program.

Survey respondents reported including varying degrees of content related to nuclear deterrence in the core courses of their intermediate- and senior-level JPME programs.³⁰ Out of all JPME core courses, 38 percent of all intermediate-level and 41 percent of all senior-level courses included some nuclear deterrence content. As shown in table 3, there are a varied number and percentage of core courses that include nuclear deterrence-related content. Variation across schools is expected as the focus on nuclear deterrence in curricula may appropriately differ.

Table 3: Joint Professional Military Education (JPME) Intermediate- and Senior-Level Core Courses with Content Related to Nuclear Deterrence and the Courses Offered as of October 2024

College or university	Core intermediate-level courses		Core senior-level courses	
	Number of courses	Number of courses with nuclear deterrence content	Number of courses	Number of courses with nuclear deterrence content
National Defense University	- ^a	N/A	37	12
National Defense University - Joint Forces Staff College	- ^a	N/A	10	7
National Intelligence University	5	1	- ^b	N/A
Army Command and General Staff College	10	2	7	3
Army War College	10	2	19	4
Naval War College	5	2	5	2
Air University	23	13	7	6
Marine Corps University	24	7	4	2
Space Force - Johns Hopkins University School of Advanced International Studies	7	5	6	3
Total	84	32 (38%)	95	39 (41%)

Source: GAO analysis of Department of Defense (DOD) information provided in response to GAO survey. | GAO-25-107416

³⁰In the survey we administered, respondents were asked to provide information on core courses—which we defined as courses students take as part of their JPME curricula—and non-core courses (e.g., elective courses, advanced studies courses, independent study courses).

Note: The amount of nuclear deterrence content in a course may range from a brief reference to more in-depth coverage. Our analysis makes no distinction regarding the extent of content. Additionally, variation across schools is expected, as curricular focus on nuclear deterrence may appropriately differ.

^aNational Defense University, including Joint Forces Staff College, does not manage any intermediate-level JPME programs.

^bNational Intelligence University does not manage any senior-level JPME programs.

Several JPME programs also offer elective or non-core courses that include nuclear deterrence-related content.³¹ Specifically, all of the colleges or universities we surveyed offered one or more electives with nuclear deterrence content, with the exception of Marine Corps University. See table 4 for additional detail.

Table 4: Joint Professional Military Education (JPME) Elective Courses with Content Related to Nuclear Deterrence

College or university	Number of electives offered with nuclear deterrence content
National Defense University	6
National Defense University - Joint Forces Staff College	1
National Intelligence University	1
Army Command and General Staff College	3
Army War College	3
Naval War College	2
Air University	11
Marine Corps University	0
Space Force - Johns Hopkins University School of Advanced International Studies	3

Source: GAO analysis of Department of Defense (DOD) information provided in response to GAO survey. | GAO-25-107416

Note: The number of nuclear deterrence-related electives available to JPME students can vary. The numbers above show the nuclear deterrence-related electives available to students when we administered our survey in September and October 2024.

³¹We asked survey respondents to identify whether each course listed in response to our survey was a core course or non-core course (e.g., elective courses, advanced studies courses, independent study courses).

According to JPME officials we spoke with, there was a varied number and focus of courses with nuclear deterrence-related content depending on each program and school's mission. Based on interviews with officials from across the military services, we found that each service school has a specific focus that is based on their respective service's missions and capabilities. Because of this, JPME topics have been covered in different ways and to different extents depending on how the topic fits within their program's focus.

In contrast to the relatively narrow focus of the service schools, National Defense University manages five senior-level JPME programs and each has a distinct focus. According to university officials, different JPME programs need flexibility to teach nuclear deterrence to classes of joint officers who may be assigned to a variety of different missions within DOD after completing a JPME program. In other words, different mission sets and assignments require JPME graduates to perform a variety of roles and responsibilities, and there will be variety in the extent and nature of nuclear deterrence-related information used in joint officer assignments.

National Intelligence University has a unique mission and manages one intermediate-level JPME program. According to officials, National Intelligence University is the only accredited federal degree-granting institution focused on the intelligence community. National Intelligence University's JPME program is also unique compared to other intermediate-level JPME programs. Specifically, officials said that all National Intelligence University graduate students earn an advanced degree in intelligence studies, while a substantial subset of that overall student population also takes specialized courses designed to deliver intermediate-level JPME to those officers who require it for their military careers. According to university officials, they worked with DOD Joint Staff officials to develop an intermediate-level JPME program so officers attending one of their degree programs could simultaneously fulfill JPME requirements if needed.

Multiple JPME program officials told us they leverage guidance and expertise from DOD agencies with a nuclear deterrence mission to add nuclear deterrence content into their curricula. See the text box below for perspectives from officials of the Defense Threat Reduction Agency and the U.S. Army Nuclear and Countering Weapons of Mass Destruction Agency about nuclear deterrence support that their agencies provide to JPME programs.

Department of Defense (DOD) Agencies Provide Expertise to Joint Professional Military Education (JPME) Programs on Nuclear Topics, Including Nuclear Deterrence

According to the 2024 DOD Joint Publication (Joint Pub.) 3-72, *Joint Nuclear Operations* (Sept. 29, 2024), the Defense Threat Reduction Agency (DTRA) helps DOD to deter weapons of mass destruction and enables a safe, secure, and effective nuclear deterrent. According to DTRA officials, DTRA works to elevate *National Defense Strategy* and *Nuclear Posture Review* topics throughout DOD and the Office of the Director of National Intelligence. DTRA officials said they have experienced greater growth in nuclear deterrence matters the past 5 years, and the agency has provided nuclear deterrence support to the National Defense University, U.S. Army War College, and the Space Force.

According to Joint Pub. 3-72, the United States Army Nuclear and Countering Weapons of Mass Destruction Agency (USANCA) is an integral part of nuclear planning in support of the combatant commands and the Army. Officials from USANCA told us that nuclear deterrence education had atrophied. In response, USANCA officials said their agency has provided technical expertise on nuclear deterrence to the Army's education institutions since 2020, including to incorporate national nuclear deterrence policy into Army Joint Professional Military Education curricula. USANCA officials said they were optimistic about expanding nuclear deterrence education, in large part due to current events, such as in Russia and Ukraine, which led to a joint acknowledgment that more nuclear deterrence education is needed.

Source: GAO analysis of DOD documentation and interviews with DOD officials. | GAO-25-107416

DOD Has Not Explicitly Defined Nuclear Deterrence in Intermediate- and Senior-Level JPME Curricula

Since 2020, DOD has required JPME programs to cover two specific nuclear deterrence-related special areas of emphasis in their curricula as part of officers' professional military education. First, JPME programs are required to incorporate high-level DOD guidance related to nuclear capabilities and concepts into their curricula as an enduring special area of emphasis.³² Second, Chairman of the Joint Chiefs of Staff guidance identified Strategic Deterrence in the 21st Century as a periodic special area of emphasis for academic years 2020-2021 and again for the 2024-2025 academic years.³³ According to the 2022 guidance for the periodic special area of emphasis, JPME programs are required to, among other things, help students understand the difference between strategic deterrence and nuclear deterrence.³⁴

According to officials from several JPME programs, a clear definition of nuclear deterrence could be helpful when they are incorporating concepts related to nuclear deterrence into their curricula. For example, officials from National Defense University said that a clear definition of nuclear deterrence would allow instructors to break down and analyze the definition for students and explain the concept more effectively.

Further, U.S. European Command and U.S. Indo-Pacific Command officials told us that additional clarity around nuclear deterrence

³²CJCSI 1800.01F and CJCSI 1800.01G.

³³CJCS Memorandum CM-0108-19 and CJCS Memorandum CM-0375-22.

³⁴CJCS Memorandum CM-0375-22.

terminology could be valuable to include in intermediate- and senior-level JPME. For example, officials told us establishing a clear definition of what constitutes nuclear deterrence would be helpful, and suggested the definition should be stated in simple terms that contrast nuclear deterrence from related concepts, such as compellence.³⁵ One official also said the term nuclear deterrence is nebulous and that related deterrence terms come across as jargon and might be ignored by joint officers.

If the Joint Staff updates its guidance to explicitly define nuclear deterrence, JPME programs could more effectively incorporate current and future nuclear-related enduring and periodic special areas of emphasis into intermediate- and senior-level curricula. Further, once the terms are explicitly defined, JPME programs could more effectively develop curricula to meet requirements in the event that additional nuclear deterrence-related special areas of emphasis are identified in the future.

Additionally, explicitly defining key nuclear terms would help JPME programs develop required nuclear deterrence-related content that aligns with DOD strategic priorities and helps students better understand the difference between strategic deterrence and nuclear deterrence. An explicit definition of nuclear deterrence would also facilitate a shared understanding of the concept, which will better prepare JPME students for post-graduation joint assignments related to nuclear deterrence missions.

³⁵DOD uses the term “Compellence,” which means seeking to modify behavior or persuade an adversary to desist an ongoing behavior, cease an action they have begun, or do something they would rather not do. Compellence, along with deterrence, falls under the broad concept of coercion. Chairman of the Joint Chiefs of Staff, Joint Pub. 3-0, *Joint Campaigns and Operations* (June 18, 2022).

JPME Programs Have Begun Developing Nuclear Deterrence Learning Outcomes but the Implementation Time Frame Is Unclear

JPME programs have begun developing learning outcomes and objectives for their curricula that include a focus on nuclear topics, including for nuclear deterrence, in response to DOD requirements.³⁶ However, we found the time frame is unclear for implementing the outcomes-based military education system. See appendix III for our prior reports and recommendations on other aspects of outcomes-based military education.

In 2022, the Chairman of the Joint Chiefs of Staff introduced guidance to reorient JPME curricula from a topics-based to an outcomes-based approach.³⁷ Table 5 shows an overview of elements in traditional topics-based and outcomes-based military education from the Chairman of the Joint Chiefs of Staff.

Table 5: Comparison of Chairman of the Joint Chiefs of Staff Traditional Topics-Based and Outcomes-Based Joint Professional Military Education

Traditional topics-based military education	Outcomes-based military education
Assessments based on rank of student ^a	Assessments based on desired learning outcomes to improve student learning and/or demonstrate the effectiveness of the program
Grades assigned based on students' points earned on activities, assignment, and exams	Completion of education implies the learner has successfully achieved all the program learning outcomes ^b
Previous results shape judgment methods	Continuous evaluation shapes judgment methods ^c
Relies on assessments to evaluate learning achievement after an instructional period	Leverages assessments that show students' progress toward learning outcome achievement
Absence of an assessment-feedback-improvement loop	Presence of an assessment-feedback-improvement loop used to ensure students master the materials before graduating and can use their knowledge

Source: GAO analysis of Department of Defense information. | GAO-25-107416

^aAssessment: The systematic collection, review, and use of information to improve student learning and development.

^bProgram learning outcomes identify and describe what graduates are to know, value, and do upon program completion.

^cEvaluation is the summative measure of performance. Joint Professional Military Education programs use ongoing assessments to support the overall program evaluation of student performance.

³⁶DODI 1322.35, vol. 1, *Military Education: Program Management and Administration* (April 26, 2022). The instruction states that one key to implementing an outcomes-based military education system is the development of a clear set of learning outcomes around which all of the system's components can be focused. Military education programs are required to develop measurable learning outcomes focused on demonstrable performance in actual or simulated operational or functional environments.

³⁷CJCS Manual 1810.01, *Outcomes-Based Military Education Procedures for Officer Professional Military Education* (April 1, 2022).

JPME Programs Have Begun Developing Nuclear Deterrence Learning Outcomes

National Defense University and the military services' intermediate- and senior-level JPME programs have begun developing nuclear deterrence learning outcomes and objectives.³⁸ According to program documentation and JPME officials, JPME programs cover nuclear deterrence learning outcomes and objectives in a variety of ways including readings, class discussions, guest lecturers, and wargaming.

³⁸Student learning is assessed using learning outcomes and learning objectives. Learning outcomes define the level of performance the student can demonstrate at the time of graduation or completion of a course. Learning objectives are normally associated with a course or lesson and describe the student's expected performance, the learning environment, and the required specificity, or standards, for student performance. CJCS Manual 1810.01.

Wargaming in Joint Professional Military Education (JPME)



The 2024 Chairman of the Joint Chiefs of Staff's *Officer Professional Military Education Policy* states that outcomes-based military education encourages the use of wargames to achieve program learning outcomes. U.S. Indo-Pacific Command and U.S. European Command officials identified several nuclear deterrence topics joint officers are exposed to through wargaming, including: escalation from conventional weapons use to nuclear weapons; including the limited use of nuclear weapons in addition to strategic nuclear weapons; and nuclear-related decisions that may need to be made if air superiority is not available. Officials from the Army, Air Force, Space Force, Navy, and Marine Corps JPME programs cited their programs' use of wargaming to educate students on nuclear deterrence matters. Officials from the National Defense University said wargaming helps their students analyze their decision-making, actions, and consequences, and offers opportunities for instructors to apply learning objectives in the wargames and assess students' abilities to achieve those objectives.

Source: GAO analysis of DOD Information; U.S. Naval War College/Petty Officer 2nd Class Tyler John (photo). | GAO-25-107416

In response to our web-based survey, JPME program officials reported that intermediate- and senior-level JPME programs had, to varying degrees, identified learning outcomes related to nuclear deterrence for their required courses.³⁹ In addition to required courses, these officials reported their JPME programs included elective courses with learning outcomes related to nuclear deterrence.

The JPME programs varied in the extent that learning outcomes and objectives included nuclear deterrence. Our review of learning outcome and objective language from documentation submitted by the National Defense University and colleges and universities of the military services identified outcomes and objectives that included language drawing from deterrence theory, strategy, and policy. Based on our analysis of survey responses and documentation submitted by survey respondents, we identified 34 learning outcomes and objectives that directly mentioned nuclear deterrence in 23 out of the 71 core courses as of October 2024.⁴⁰

Table 6 shows examples of learning outcome and objective language, submitted in response to our web-based survey, that directly mention nuclear deterrence.

³⁹According to a Joint Staff official, JPME programs are also developing, and achieving, course learning outcomes for strategic deterrence.

⁴⁰These learning outcomes and objectives included curricular information where the concept of "nuclear deterrence" was explicitly conveyed within the learning outcome or objective.

Table 6: Examples of Nuclear Deterrence-Focused Language Identified in Learning Outcomes and Objectives from Selected Core Courses in Joint Professional Military Education

College or university	Course name	Learning outcome or objective
National Defense University	<i>National Security Practicum: The Nuclear Enterprise</i>	Analyze the methodologies applied by U.S. Strategic Command to measuring the effectiveness of U.S. nuclear deterrence.
National Defense University – Joint Forces Staff College	<i>Strategy and Campaign Design</i>	Understand nuclear deterrence. Infer the role of nuclear deterrence across the competition-conflict continuum with nuclear strategic competitors.
Army War College	<i>National Security Policy and Strategy</i>	Evaluate the utility of the theorists and strategists we have studied so far (Thucydides, Clausewitz, etc.) in helping strategists negotiate the demands of emerging security challenges such as nuclear weapons and deterrence.
Army Command and General Staff College	<i>Joint Warfighting</i>	What strategic concerns and technology drove the development of nuclear deterrence strategy?
Naval War College	<i>National Security Decision-Making</i>	Analyze the impact of Russia's nuclear threats and Chinese nuclear modernization on deterrence.
Air University	<i>Foundations of Strategy</i>	Analyze basic principles and logics of deterrence, with a focus on nuclear deterrence.
Marine Corps University	<i>Diplomacy and Statecraft</i>	Evaluate how the State Department contributes to government-wide nuclear weapons policy and deterrence.
Space Force – Johns Hopkins University	<i>History and Theory of Military Strategy</i>	Analyze theories of nuclear deterrence and mutually assured destruction. Evaluate the ethical and humanitarian challenges posed by nuclear deterrence.

Source: GAO analysis of DOD information and documentation submitted in response to GAO web-based survey about nuclear deterrence in Joint Professional Military Education. | GAO-25-107416

Note: These courses are examples from eight of the nine colleges or universities offering JPME programs. The courses were selected because their learning outcome or learning objective language explicitly included nuclear deterrence. National Intelligence University officials responded to our web-based survey that they offer one core course that relates to nuclear deterrence. Based upon our review of the curricular information, there is no specific nuclear deterrence learning outcome language.

Space Force joint professional military education is provided to joint officers through Johns Hopkins University's School of Advanced International Studies.

Time Frame Is Unclear for Implementation of the Outcomes-Based Military Education System

Chairman of the Joint Chiefs of Staff guidance required that JPME programs begin initiating the 6-year cycle for implementing outcomes-based education within 6 months of the release of the manual titled *Outcomes-based Military Education Procedures for Officer Professional Military Education*.⁴¹ It was released in April 2022. According to the manual, the transition to the outcomes-based system consists of JPME programs completing seven milestones—milestones 0 through 6—to

⁴¹CJCS Manual 1810.01.

achieve certification under the outcomes-based military education system.

- At Milestone 0, accredited JPME programs coordinate with the Joint Staff to begin pre-coordination for a formal review of program learning outcomes and assessment plans to satisfy outcomes-based military education requirements at Milestones 1 and 2.
- At Milestone 1, JPME program learning outcomes are reviewed to ensure the development process and outcome statements follow Chairman of the Joint Chiefs of Staff requirements and guidance.
- At Milestone 2, the Joint Staff reviews learning outcome assessment plans developed by JPME programs, and at Milestone 3, JPME programs are eligible for conditional certification.⁴²

DOD has made progress on implementing its outcomes-based military education system. Based upon our review of Joint Staff documentation—about one-third of JPME programs had received conditional certification as of June 2025, meaning that these JPME programs have satisfied the Joint Staff requirements expected at Milestone 3. According to our analysis of Joint Staff documentation, the Joint Staff estimated the remaining two-thirds of programs were expected to receive conditional certification by December 2025. An exception is Space Force’s JPME programs that the Joint Staff estimated will be conditionally certified by December 2027.⁴³

If JPME programs move through the milestones as planned, DOD will likely not fully implement the required transition toward the outcomes-based military education system until the late 2020s. However, it is unclear when this implementation should be complete because the Joint Chiefs of Staff 2022 manual—*Outcomes-Based Military Education*

⁴²At Milestone 4, JPME programs are required to provide evidence of compliance under the outcomes-based military education policy and student achievement of learning outcomes after 2 academic years. By Milestone 5, JPME programs can apply for and achieve full certification which requires evidence of program learning assessments presented in two biennial JPME reports and evidence of common educational standards compliancy and effectiveness based on 4 years of annual JPME reports. At Milestone 6, JPME programs submit their final reports, and the Joint Staff evaluates and reports on the overall JPME effectiveness under the outcomes-based military education policy. If all requirements are met, full certification is granted.

⁴³According to Space Force and Joint Staff officials, the Space Force is working towards achieving accreditation of its JPME programs under the Process for Accreditation of Joint Education and does not currently have a time frame established for implementing the outcomes-based military education system.

Procedures for Officer Professional Military Education—does not provide a specific date by which JPME programs should conclude implementation of the outcomes-based education system.

We also found that JPME program officials had varying understandings of when the outcomes-based military education system must be implemented. For example,

- Army officials said they understood the timeline for implementing the outcomes-based education system was to have initial operational capability by 2029.
- Marine Corps officials said their understanding of the timeline was either 2027 or 2028 during which time the program learning outcomes can be phased in over time.
- Space Force officials expected it to take 3 to 4 years to complete implementation.

Current Joint Staff guidance requires that JPME programs achieve the outcomes-based military education system milestones over 6 years, including periodic reviews and reports of evidence of program compliance and effectiveness in achieving program outcomes.⁴⁴ The guidance also states that at the end of the 6-year implementation period, the Joint Staff will evaluate overall JPME effectiveness under the outcomes-based military education system based on JPME program reporting.

GAO's Standards for Internal Control in the Federal Government state that management should define objectives and clearly define what is to be achieved, how it will be achieved, and the time frames for achievement.⁴⁵

Joint Staff guidance implies an implementation starting date in October 2022 and an implementation end date of either October 2028 or November 2028. However, service officials expressed different understandings of the implementation time frames. DOD has not updated its guidance with specific implementation time frames to include conditional and full certification, which are time frames for the outcomes-based military education system administered by all intermediate- and senior-level JPME programs. In June 2025, a Joint Staff official acknowledged that the current manual regarding *Outcomes-based*

⁴⁴CJCS Manual 1810.01.

⁴⁵[GAO-14-704G](#).

Military Education Procedures for Officer Professional Military Education does not have a specific implementation date, and said that the Joint Staff is revising the manual. By setting a specific implementation time frame for its outcomes-based military education system, DOD could provide the JPME programs a clear deadline to work toward as the programs continue to develop program learning outcomes that could help prepare joint officers for missions involving nuclear deterrence.

Conclusions

Nuclear deterrence is a top priority for DOD. Recognizing that nuclear deterrence has evolved, DOD has taken steps to shift its joint force education on nuclear deterrence from a Cold War perspective to focus on what joint officers need to know and do to respond to a variety of threats shaped by additional complexities, including a growing set of adversaries' nuclear capabilities.

Intermediate- and senior-level JPME programs have adapted relevant courses to focus on nuclear deterrence in accordance with DOD guidance. However, DOD has not included an explicit definition of nuclear deterrence in the guidance JPME programs use to develop curricula for mandatory topics, including special areas of emphasis related to nuclear deterrence. By providing JPME programs an explicit definition of nuclear deterrence to inform associated JPME curricula, DOD will be better prepared to educate joint officers on the differences among related deterrence concepts and to prepare joint officers to support the demands of assigned missions involving nuclear deterrence.

JPME programs have been developing nuclear deterrence learning outcomes, and some include course-level nuclear deterrence learning outcomes and objectives in their required courses that draw from deterrence theory, strategy, and nuclear policy. Additionally, DOD has made progress on implementing its outcomes-based military education system, including ensuring JPME programs are reaching conditional and full certification milestones. Clarifying the specific time frame for implementation—including for conditional and full certification—will help DOD maintain their momentum in implementing the effort and meeting the contemporary nuclear deterrence educational needs of the joint force.

Recommendations for Executive Action

We are making three recommendations to the Secretary of Defense.

The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff updates the guidance on enduring and periodic special areas of emphasis to explicitly define nuclear deterrence to aid all

intermediate- and senior-level JPME programs' development of JPME curricula with nuclear deterrence content. (Recommendation 1)

The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff updates the guidance on enduring and periodic special areas of emphasis to require all intermediate- and senior-level JPME programs to incorporate the definition of nuclear deterrence into relevant JPME curricula. (Recommendation 2)

The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff sets a specific time frame for implementation—including for conditional and full certification—of the outcomes-based military education system by all intermediate- and senior-level JPME programs. (Recommendation 3)

Agency Comments and Our Evaluation

We provided a draft of this report to DOD and ODNI for review and comment. In its comments, DOD partially concurred with our recommendations. We have reprinted DOD's comments in appendix IV. ODNI provided technical comments, which we incorporated as appropriate.

Regarding our first and second recommendations, DOD concurred that the Chairman of the Joint Chiefs of Staff should define nuclear deterrence and require all intermediate- and senior-level JPME programs to incorporate the definition into relevant JPME curricula related to enduring special areas of emphasis. However, DOD did not concur with the aspect of our recommendations related to updating JPME guidance for periodic special areas of emphasis, noting that periodic special areas of emphasis are subject to a 2-year time-frame restriction.

We believe DOD's intent to update the JPME guidance to define nuclear deterrence and incorporate the definition into relevant JPME curricula for enduring special areas of emphasis is a positive first step. However, we continue to believe that the Chairman of the Joint Chiefs of Staff should update its JPME guidance to define nuclear deterrence and also incorporate the definition into relevant JPME curricula for periodic special areas of emphasis.

As previously described, the Chairman of the Joint Chiefs of Staff guidance identified Strategic Deterrence in the 21st Century as a periodic special area of emphasis for recent academic years. For example, according to the Chairman of the Joint Chiefs of Staff's guidance for the

2024-2025 academic years, JPME programs are required to, among other things, help students understand the difference between strategic deterrence and nuclear deterrence. If the Joint Staff includes nuclear-related periodic special areas of emphasis in its updated guidance, JPME programs could more effectively develop curricula to meet requirements if additional nuclear deterrence-related periodic special areas of emphasis are identified in the future. Consequently, this would better prepare JPME students for post-graduation joint assignments related to nuclear deterrence missions.

DOD could fully meet the intent of our first and second recommendations by updating its JPME guidance to define nuclear deterrence and incorporate the definition into relevant JPME curricula for future relevant periodic special areas of emphasis. We look forward to DOD's continued actions on addressing these recommendations.

DOD partially concurred with our third recommendation. In its written comments, DOD concurred that the Chairman of the Joint Chiefs of Staff should set a specific time frame for implementation of the outcomes-based military education system. In addition, DOD stated that its draft revision to the 2022 *Outcomes-Based Military Education Procedures for Officer Professional Military Education* manual includes a time frame for certification of all intermediate- and senior-level JPME programs under outcomes-based military education. We recognize that DOD is taking actions to update JPME guidance to set a time frame for certification of all intermediate- and senior-level JPME programs under outcomes-based military education, and believe the actions described by DOD could, if completed, address the intent of our third recommendation.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and other interested parties. In addition, this report is available at no charge on the GAO website at <http://www.gao.gov>. If you or your staff have any questions about this report, please contact me at kirschbaumj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix V.

//SIGNED//

Joseph W. Kirschbaum
Director, Defense Capabilities and Management

List of Committees

The Honorable Roger F. Wicker
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Mitch McConnell
Chair
The Honorable Christopher Coons
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Mike Rogers
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Ken Calvert
Chairman
The Honorable Betty McCollum
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Survey Administered to Colleges and Universities with Joint Professional Military Education Programs

We distributed a web-based survey to officials from intermediate- and senior-level Joint Professional Military Education (JPME) programs via a hyperlink transmitted by email. The survey we developed and administered to obtain information for this review is reprinted below. Some sections of the survey may not have appeared to all survey respondents or could be duplicated based on previous responses. Those sections are indicated by bracketed text below where applicable.

See appendix II for additional information on how we developed, administered, and analyzed the results of the survey.

Survey on Nuclear Deterrence Curriculum in JPME Phase I and Phase II Programs

The U.S. Government Accountability Office (GAO) is an independent and non-partisan agency responsible for reporting to Congress on federal programs. A Senate Armed Services Committee report accompanying a bill for the fiscal year 2024 National Defense Authorization Act included a provision directing GAO to review the extent to which educational content and standards concerning strategic and regional nuclear deterrence theory, strategy, policy, and operations are incorporated into DOD’s Joint Professional Military Education (JPME). The request for a GAO review is part of the committee’s work to clarify whether the JPME system emphasizes the understanding of nuclear deterrence concepts in a manner aligned with the importance of effective nuclear deterrence in U.S. defense strategy.

JPME is a type of military education and defined in Title 10, U.S. Code, section 2151 as a program of instruction consisting of subject matter related to joint planning at all levels of war, joint doctrine, joint command and control, and joint force requirements, among others. JPME satisfies the educational requirements for joint qualified officer development.

Purpose of this Survey: This survey will collect information on the courses currently offered in your JPME Phase I (JPME-I) and Phase II (JPME-II) program(s) that include content related to nuclear deterrence.

We selected your education institution, because it is one of the education institutions managed by DOD, ODNI, intelligence, or the military services that include accredited JPME-I and JPME-II programs.

Definitions

Nuclear Deterrence in JPME curriculum: When responding to the survey questions, JPME courses and learning outcomes, including subordinate learning outcomes, should be considered as incorporating content related to nuclear deterrence if the course or learning outcomes include content described in the elements below:

1. 'Deterrence' is described as the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs the perceived benefits. Joint Chiefs of Staff, Joint Publication (Joint Pub.) 3-0, Joint Campaigns and Operations (June 18, 2022)
2. 'Nuclear deterrent' is described as a desired strategic effect of the U.S. nuclear offensive and defensive capability seeking to assure allies and dissuade adversaries regarding nuclear and strategic attack endeavors. The Nuclear Matters Handbook (2020)
3. 'Regional nuclear deterrence' is described as bolstered coordination with allies and improving conventional forces' ability to operate in the face of limited nuclear attacks, which has a deterrence effect. DOD will maintain the capability to employ an 'integrated deterrence' approach that draws on tailored combinations of conventional, cyber, space, and information capabilities, together with the unique deterrence effects of nuclear weapons. 2022 National Defense Strategy (Oct. 27, 2022)
4. 'Extended nuclear deterrence' is described as actions contributing to U.S. non-proliferation goals by giving allies and partners confidence that they can resist strategic threats and remain secure without acquiring nuclear weapons of their own. The 2022 Nuclear Posture Review (NPR) (Oct. 27, 2022)
5. 'Deterrence activities' are described as those conducted in an effort to prevent weapons of mass destruction (WMD) proliferation and/or use by presenting a credible U.S. and/or partner nation response through specific counteractions that would deny the effects an enemy intends to create by using WMD. Joint Pub. 3-40, Joint Countering Weapons of Mass Destruction (July 14, 2021)

Course: For the purpose of this survey, our definition of course is inclusive of:

- All courses that are currently taught for which students receive JPME credit;
- Core courses and non-core courses (e.g., elective courses, advanced studies courses, independent study courses); and
- Resident, non-resident, and hybrid/blended courses, including satellite seminars or classes, and distance/distributed learning.

Learning Outcomes & Subordinate Learning Outcomes: For the purpose of this survey, learning outcomes can include outcomes other than program and secondary outcomes as defined below by Chairman of

the Joint Chiefs of Staff Manual (CJCSM) 1810.01, *Outcomes-Based Military Education Procedures for Officer Professional Military Education* (April 1, 2022):

- Program Learning Outcomes (PLOs) are outcomes that identify and describe the specific desired knowledge, skills, and dispositions graduates demonstrate after the program.
- Subordinate Learning Outcomes (SLOs) are outcomes flowing from PLOs that students are expected to be proficient in putting into action or utilizing after the course. JPME programs may employ a hierarchy of SLOs flowing from PLOs that identify and describe the specific desired knowledge, skills, and dispositions graduates will demonstrate at the conclusion of the program. SLOs can include course learning outcomes or student learning outcomes.
- For the purpose of this survey, learning outcomes can include outcomes other than those listed above (e.g., lesson outcomes and outcome-oriented learning elements).

According to Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01G, *Officer Professional Military Education Policy* (April 15, 2024), your organization manages the following active JPME-I and/or JPME-II program(s):

[The JPME program(s) organized within your organization will be listed here]

The question(s) on this page refer to the following program: *[The first JPME program will be listed here]*

Does this program include content related to nuclear deterrence in its curriculum?

☐ Yes

☐ No

Does the program include any content related to nuclear deterrence at all?

☐ Yes. Please explain:

☐ No

The question(s) on this page refer to the following program: *[The first JPME program will be listed here]*

Do you offer this program to resident students, non-resident students, and hybrid/blended students? *Please select one answer per row.*

	Yes	No
Resident students	<input type="radio"/>	<input type="radio"/>
Non-resident students	<input type="radio"/>	<input type="radio"/>
Hybrid/blended students	<input type="radio"/>	<input type="radio"/>

Are resident, non-resident, and hybrid/blended students required to take the same core courses for this program?

☐ Yes

☐ No

☐ Other. Please explain:

Appendix I: Survey Administered to Colleges
and Universities with Joint Professional
Military Education Programs

The question(s) on this page refer to the following program: *[The first JPME program will be listed here]*

Please list all courses currently offered for this program that include content related to nuclear deterrence. Please leave any extra lines blank. The text you provide in these fields will be used later in the survey.

☐ Course 1

☐ ...Course 20

Is there anything else GAO should know about how this program includes content related to nuclear deterrence?

The next series of questions are about the following program and course:

Program: *[The first JPME program will be listed here]*

Course: *[The first course of the first JPME program will be listed here]*

Is this course **cross-listed** with another JPME Program? In other words, is this course—with the same content—offered by more than one JPME program?

☐ No

☐ Yes

Which JPME-I and JPME-II programs offer the course listed above?
Please select all that apply.

- ☐ *[The first JPME program will be listed here]*
- ☐ *[The second JPME program will be listed here (if applicable)]*
- ☐ *[The third JPME program will be listed here (if applicable)]*
- ☐ *[The fourth JPME program will be listed here, (if applicable)]*

The question(s) on this page refer to the following program and course.

Program: *[The first JPME program will be listed here]*

Course: *[The first course of the first JPME program will be listed here]*

Is the course listed above a core course or a non-core course (e.g.,
elective, advanced studies, independent study, etc.)?

- ☐ Core course
- ☐ Non-core course
- ☐ Other. Please explain:

Appendix I: Survey Administered to Colleges
and Universities with Joint Professional
Military Education Programs

Is the course listed above offered to resident students, non-resident students, or hybrid/blended students? Please select one answer per row.

	Yes	No
Resident students	<input type="radio"/>	<input type="radio"/>
Non-resident students	<input type="radio"/>	<input type="radio"/>
Hybrid/blended students	<input type="radio"/>	<input type="radio"/>

The question(s) on this page refer to the following program and course.
Program: *[The first JPME program will be listed here]*

Course: *[The first course of the first JPME program will be listed here]*

Does the course listed above have learning outcome(s) or subordinate learning outcome(s) related to nuclear deterrence?

☐ Yes

☐ No

The question(s) on this page refer to the following program and course.
Program: *[The first JPME program will be listed here]*
Course: *[The first course of the first JPME program will be listed here]*

Can you provide at least one piece of documentation showing that the course listed above has learning outcome(s) or subordinate learning outcome(s) related to nuclear deterrence? Documentation could include syllabus excerpts, instructor notes, lesson plans, example slides from course slide decks, course-specific student directives, module or course descriptions, etc.

☐ Yes

☐ No. Please explain:

In the boxes below, please upload one or more pieces of documentation showing that the course listed above has learning outcome(s) or subordinate learning outcome(s) related to nuclear deterrence.

Upload 1 (required)

Please specify the page number(s) where the information on nuclear deterrence is located in upload 1. (required)

☐ Pg. #'s

Upload 2 (optional)

If you have uploaded a second document, please specify the page number(s) where the information on nuclear deterrence is located in upload 2.

☐ Pg. #'s

**Appendix I: Survey Administered to Colleges
and Universities with Joint Professional
Military Education Programs**

Upload 3 (optional)

If you have uploaded a third document, please specify the page number(s) where the information on nuclear deterrence is located in upload 3.

Pg. #'s _____

[Note: The following question will only be displayed if you answered 'No' to either having or being able to provide documentation about learning outcomes related to nuclear deterrence.]

The question(s) on this page refer to the following program and course.

Program: *[The first JPME program will be listed here]*

Course: *[The first course of the first JPME program will be listed here]*

Can you provide at least one piece of documentation showing that the course listed above includes **content related to nuclear deterrence** in its curriculum? Documentation could include syllabus excerpts, instructor notes, lesson plans, example slides from course slide decks, course-specific student directives, module or course descriptions, etc.

☐ Yes

☐ No. Please explain:

In the boxes below, please upload one or more pieces of documentation showing that the course listed above includes content related to nuclear deterrence in its curriculum.

Upload 1 (required)

Please specify the page number(s) where the information on nuclear deterrence is located in upload 1. (required)

☐ Pg. #'s

Upload 2 (optional)

If you have uploaded a second document, please specify the page number(s) where the information on nuclear deterrence is located in upload 2.

☐ Pg. #'s

Upload 3 (optional)

If you have uploaded a third document, please specify the page number(s) where the information on nuclear deterrence is located in upload 3.

☐ Pg. #'s

The next series of questions are about the following program:

[Subsequent block(s) of questions will repeat the past questions for each JPME program and JPME course with nuclear deterrence content managed by your education institution].

Is there anything else GAO should know about nuclear deterrence content in the JPME program(s) covered in this survey in addition to the responses you have already provided?

We will use the answers to the following questions to assess the reliability of the data you have provided in this survey.

How did you collect the data on courses and learning outcomes (including subordinate learning outcomes if applicable) that you provided in this survey?

Did you use an information system/database to get the course and learning outcome information that was requested in this survey (e.g., a centralized information technology system or MS Excel spreadsheets)?

☐ Yes

☐ No

**Appendix I: Survey Administered to Colleges
and Universities with Joint Professional
Military Education Programs**

Please describe the information system/database in a few sentences.

What procedures ensure that the information system/database consistently captures all courses and learning outcomes, including subordinate learning outcomes?

Is there written documentation of the procedures described in the previous question?

☐ Yes

☐ No

☐ Not Applicable

In the box below, please upload documentation on the information system/database procedures.

What is your opinion of the quality of the data that you've provided in this survey, specifically its completeness and accuracy?

Are there any other data details GAO should be aware of to help with characterizing the reliability of the data being provided about your JPME program(s)?

Appendix II: Objectives, Scope, and Methodology

A Senate Armed Services Committee report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2024 includes a provision for us to assess the Department of Defense (DOD)'s joint professional military education (JPME) system to include a review of curricula involving nuclear deterrence.¹ In this report, we assess the extent to which: (1) DOD and the military services have included nuclear deterrence content in guidance that informs JPME curricula; (2) JPME programs have included nuclear deterrence content in JPME curricula; and (3) JPME programs have begun developing learning outcomes that include nuclear deterrence.

For objective one, we interviewed DOD and Office of the Director of National Intelligence (ODNI) officials, including officials from the Joint Staff Directorate for Joint Force Development (Joint Staff J7), Office of the Deputy Assistant Secretary of Defense for Force Education and Training, the military services, and the nine colleges and universities that manage the intermediate- and senior-level JPME programs (see table 7) about nuclear deterrence-related JPME requirements. We also interviewed officials from U.S. Strategic Command, U.S. European Command, and U.S. Indo-Pacific Command about the education and training needs of officers assigned to combatant command positions related to nuclear deterrence.

¹S. Rep. No. 118-58, at 293 (2023).

Table 7: Department of Defense, Office of the Director of National Intelligence, and Military Service Intermediate- and Senior-Level Joint Professional Military Education Programs

College or university	Joint Professional Military Education (JPME) program	JPME phase
National Defense University	College of Information and Cyberspace	Senior
	College of International Security Affairs	Senior
	Dwight D. Eisenhower School for National Security and Resource Strategy (Eisenhower School)	Senior
	National War College	Senior
Joint Forces Staff College ^a	Joint Advanced Warfighting School	Senior
	Joint and Combined Warfighting School ^b	Senior
National Intelligence University	National Intelligence University - JPME Cohort	Intermediate
Army War College	Army War College Distance Education Senior Service College	Intermediate
	Army War College Joint Studies Program	Senior
	Army War College Resident Senior Service College Program	Senior
Army Command and General Staff College	Advanced Strategic Leadership Studies Program	Senior
	Command and General Staff Officers Course	Intermediate
Naval War College	College of Naval Command and Staff	Intermediate
	College of Naval Warfare	Senior
Air University	Air Command and Staff College Distance Learning	Intermediate
	Air Command and Staff College Distance Learning (Online Master's)	Intermediate
	Air Command and Staff College Resident	Intermediate
	Air War College - Resident	Senior
Marine Corps University	Marine Corps Command and Staff College - Resident	Intermediate
	Marine Corps Command and Staff College Distance Education Program - Non-resident	Intermediate
	Marine Corps War College	Senior
Johns Hopkins University School of Advanced International Studies	Space Force Schriever Space Scholars	Intermediate
	Space Force West Space Scholars	Senior

Source: GAO analysis of Department of Defense data. | GAO-25-107416

We also reviewed documentation—including the *Officer Professional Military Education Policy* series and the *Outcomes-Based Military Education Procedures for Officer Professional Military Education*—to determine how nuclear deterrence content has been incorporated into JPME guidance provided by the Chairman of the Joint Chiefs of Staff and Office of the Secretary of Defense.² Additionally, we reviewed military service-level JPME guidance to the extent that it was available. We compared the documentation to national strategy and policy on nuclear

²Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01G, *Officer Professional Military Education Policy* (April 15, 2024); CJCSI 1800.01F, *Officer Professional Military Education Policy* (May 15, 2020); CJCS Manual, *Outcomes-Based Military Education Procedures for Officer Professional Military Education* (April 1, 2022).

deterrence to describe how JPME guidance includes nuclear deterrence content drawn from national-level strategy and policy, including how it should be incorporated into JPME curricula.

For objective two, we developed a web-based survey to distribute to each of the nine colleges and universities that manage the 23 intermediate- and senior-level JPME programs included in our report.³ In the survey, we asked respondents to list the courses each program offered that included content related to nuclear deterrence. We also asked respondents to answer specific questions about each course they listed. These questions related to, among other things, whether each course was a core (i.e., required) or non-core (i.e., elective) course; was taught in person, online, or included a mix of in-person and online learning; and had learning outcome(s) related to nuclear deterrence. A copy of the web-based survey is reproduced in appendix I.

To minimize errors that might occur from respondents interpreting our questions differently than we intended, we developed the survey with the assistance of our survey specialist, including an independent review by an additional survey specialist on the draft survey.

In addition, we pretested the survey with two universities: Air University and Marine Corps University. In doing so, we interviewed and coordinated with officials at these universities to obtain their views of whether our questions were clear and logical and to ensure that respondents could answer the questions without undue burden. We incorporated these officials' feedback, as appropriate. We then administered the survey via a hyperlink included in an email to each of the nine colleges and universities and received responses from all nine. We conducted the survey in September and October 2024. Two weeks later, we sent a reminder email with a link to the survey to everyone who had not responded. The nine colleges and universities identified 32 intermediate-level and 39 senior-level core courses that included content related to nuclear deterrence.

³We coordinated with the colleges and universities that manage JPME programs to ensure our survey covered all intermediate- and senior-level JPME programs. To identify the programs each college and university managed at the time our survey was administered, we first developed a list of JPME programs from CJCSI 1800.01G. We then asked officials at each college and university to review the list of their school's programs and provide any corrections if necessary. After incorporating the corrections we received, we identified 23 intermediate- and senior-level JPME programs for the purposes of our survey design and data collection.

We also reviewed documentation and interviewed officials to assess the extent to which JPME programs have covered nuclear deterrence-related special areas of emphasis in their curricula as part of outcomes-based military education. First, we reviewed documentation—including the *Officer Professional Military Education Policy* series and the *Outcomes-Based Military Education Procedures for Officer Professional Military Education*—to identify nuclear deterrence-related special areas of emphasis and associated curriculum requirements.⁴ Next, we interviewed JPME program officials from each of the nine colleges and universities that manage intermediate- and senior-level JPME programs. For the JPME programs managed by military education institutions, we interviewed officials from the applicable military service headquarters. We asked officials about the process of implementing JPME requirements to incorporate nuclear deterrence content and challenges, if any, to meeting those requirements.

For objective three, we asked survey respondents whether each course they identified as including nuclear deterrence content also had learning outcome(s) related to nuclear deterrence. If a survey respondent answered “yes” to a course having nuclear deterrence learning outcomes, they were asked to upload one or more pieces of documentation showing that the course had learning outcome(s) related to nuclear deterrence. Two analysts reviewed the documentation uploaded by survey respondents for the core course survey respondents indicated containing nuclear deterrence content. The analysts independently determined whether the documentation contained nuclear deterrence learning outcomes or objectives that directly mentioned nuclear deterrence (i.e., where the concept of “nuclear deterrence” is explicitly conveyed within the learning outcome or objective).

We also reviewed documentation and responses to our survey—as well as interviewed cognizant DOD and ODNI officials—about developing nuclear deterrence learning outcomes into intermediate- and senior-level JPME curricula. Additionally, we compared JPME programs’ implementation of the outcomes-based education system, including nuclear deterrence learning outcomes and implementation time frames, with Chairman of the Joint Chiefs of Staff guidance for outcomes-based education.⁵ Specifically, we assessed whether JPME programs were developing learning outcomes or objectives as required by the Chairman

⁴CJCSI 1800.01G; CJCSI 1800.01F; CJCS Manual 1810.01.

⁵CJCS Manual 1810.01.

of the Joint Chiefs of Staff for outcomes-based military education and whether the outcomes-based military education system had a specific time frame for implementation. We also compared JPME programs' implementation of the outcomes-based education system—including nuclear deterrence learning outcomes and implementation time frames—with selected principles from the *Standards for Internal Control in the Federal Government* to assess implementation of the outcomes-based system.⁶ Specifically, the principle that management defines objectives in specific terms so they are understood at all levels of the entity which involves the time frames for achievement.

We conducted this performance audit from February 2024 to September 2025 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁶GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

Appendix III: Prior GAO Recommendations Related to Professional Military Education

In June 2023, we reported on Department of Defense (DOD)'s efforts to ensure military personnel have adequate education, exposure, and expertise in the Indo-Pacific region.¹ We made four recommendations to address identified challenges, including for professional military education (PME) programs to: develop specific learning outcomes, report requirements, and implement time frames. DOD concurred with one of the recommendations related to updating time frames for implementing focused learning outcomes and implemented that recommendation. DOD partially concurred with the remaining three recommendations related to promotion board decisions and reporting requirements for focused learning outcomes and has implemented the recommendation related to reporting requirements for focused learning outcomes. We continue to monitor the status of these recommendations.

In February 2020, we reported on DOD's PME programs and found several areas where DOD had taken steps to improve oversight of joint professional military education (JPME) programs and to have curricula that includes required JPME content, such as joint learning areas.² We made seven recommendations to improve outcomes-based military education, including for PME programs to report program goals and results. DOD concurred with all seven recommendations. Two of these recommendations were implemented, and we continue to monitor the status of the remaining five.

¹GAO, *Military Officers: DOD Can Enhance Promotion and Education Guidance for Addressing Indo-Pacific Region Needs*, GAO-23-106070 (Washington, D.C.: June 29, 2023).

²GAO, *Professional Military Education: Programs Are Accredited, but Additional Information is Needed to Assess Effectiveness*, GAO-20-323 (Washington, D.C.: February 20, 2020).

Appendix IV: Comments from the Department of Defense



Reply Zip Code:
23435-2697

Mr. Joseph Kirshbaum
Director, Defense Capabilities Management
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Mr. Kirshbaum,

This is the Department of Defense (DoD) signed response to the GAO Draft Report GAO-25-107416, "*NUCLEAR ENTERPRISE: Clearer Guidance Could Improve Joint Professional Military Education Nuclear Deterrence Curriculum*," dated July 30, 2025 (GAO Code 107416).

We note that within the report the GAO makes three recommendations. Attached is DoD's response to the three recommendations.

My point of contact is Dr. Jerry L. West who can be reached at jerry.l.west.civ@mail.mil and 703-772-9168.

Sincerely,

BAILEY.PETER: Digitally signed by
G.1181177108 BAILEY.PETER G.1181177108
Date: 2025.08.28 15:58:07 -0400

PETER G. BAILEY
Major General, U.S. Air Force
Deputy Director
Joint Concepts, Doctrine, and Education

Enclosure:
As stated

UNCLASSIFIED

GAO DRAFT REPORT DATED JULY 30, 2025
GAO-25-107416 (GAO CODE 107416)

“NUCLEAR ENTERPRISE: CLEARER GUIDANCE COULD IMPROVE JOINT
PROFESSIONAL MILITARY EDUCATION NUCLEAR DETERRENCE
CURRICULUM”

TAB B ATTACHMENT
DoD RESPONSE
TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff updates the guidance on enduring and periodic special areas of emphasis to explicitly define nuclear deterrence to aid all intermediate- and senior-level JPME programs’ development of JPME curricula with nuclear deterrence content.

DoD RESPONSE: Partially Concur. DoD concurs with the recommendation that the Chairman define nuclear deterrence to aid all intermediate- and senior-level JPME programs’ development of JPME curricula with nuclear deterrence content. However, DoD non-concurs that the Chairman update guidance on periodic special areas of emphasis. CJCSI 1800.01G and CJCSM 1810 series provide guidance for ensuring that nuclear concepts and capabilities are covered as an enduring special area of emphasis which are not subjected to the two-year timeframe restriction for periodic special areas of emphasis.

RECOMMENDATION 2: The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff updates the guidance on enduring and periodic special areas of emphasis to require all intermediate- and senior-level JPME programs to incorporate the definition of nuclear deterrence into relevant JPME curricula.

DoD RESPONSE: Partially Concur. DoD concurs with the recommendation that the Chairman require all intermediate- and senior-level JPME programs to incorporate the definition of nuclear deterrence into relevant intermediate- and senior-level Joint Professional Military Education curricula. However, DoD non-concurs that the Chairman update guidance on periodic special areas of emphasis. Chairman of the Joint Chiefs of Staff Instruction (CJCSI 1800.01G) and Manual (CJCSM 1810.01) provide guidance for ensuring that nuclear concepts and capabilities are covered into relevant Joint Professional Military Education curricula as an enduring special area of emphasis.

RECOMMENDATION 3: The Secretary of Defense should ensure that the Chairman of the Joint Chiefs of Staff sets a specific time frame for implementation – including for conditional and full certification – of the outcomes-based military education system by all intermediate- and senior-level JPME programs.

DoD RESPONSE: Partially Concur. The DoD concurs that the Chairman of the Joint Chiefs of Staff sets a specific time frame for implementation of outcomes-based military education.

**Appendix IV: Comments from the Department
of Defense**

2

To be sure, the draft revision to CJCSM 1810.01 includes a time-frame for certification of all intermediate- and senior-level JPME programs under outcomes-based military education. The DoD non-concurs with the implied connection between the need for a specific time frame for certification of JPME programs and nuclear deterrence learning outcomes for intermediate- and senior-level JPME programs. Enduring special areas of emphasis and program learning outcomes have been mandatory for all JPME programs beginning in May 2020 with the release of CJCSI 1800.01F. All intermediate- and senior-level JPME programs have program learning outcomes informed by nuclear capabilities. As written, the recommendation conflates the need for a specific time frame for outcomes-based military education implementation with the need for Chairman of the Joint Chiefs of Staff guidance on nuclear deterrence learning outcomes.

Appendix V: GAO Contacts and Staff Acknowledgments

GAO Contact

Joseph W. Kirschbaum, kirschbaumj@gao.gov

Defense Capabilities and Management

Staff Acknowledgments

In addition to the contact named above, Penney Harwell Caramia (Assistant Director), Andrew Duggan (Analyst-in-Charge), Susannah Hawthorne, Madeline Barch, Felicia Lopez, Kelly Miller, Richard Powelson, Jesse Andrews, Kevin Copping, Jennifer Andreone, Serena Epstein, Norris “Traye” Smith, Herb Bowsher, and Carly Gerbig made key contributions to this report.

Related GAO Products

Military Officers: DOD Can Enhance Promotion and Education Guidance for Addressing Indo-Pacific Region Needs. [GAO-23-106070](#). Washington, D.C.: June 29, 2023.

Defense Nuclear Enterprise: DOD Can Improve Processes for Monitoring Long-Standing Issues, [GAO-21-486](#). Washington, D.C.: August 18, 2021.

Professional Military Education: Programs Are Accredited, but Additional Information Is Needed to Assess Effectiveness. [GAO-20-323](#). Washington, D.C.: February 20, 2020.

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